IDG.net

ALL OUT FOR SALES

Slumping retailer J.C. Penney tries to unify multi-channel customer information to boost sales. Page 56

SECURITY CHOICES

Selecting a big or small consultancy depends on your needs, say users like Marriott's Jerry Dixon. Page 76

DO CIOs EQUAL CFOs?

Dick Hudson argues that the CIO may be as important to a corporation today as the CFO was a century ago. Page 32

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS • WWW.COMPUTERWORLD.COM

NOVEMBER 27, 2000 • VOL. 34 • NO. 48 • $5 COPY

BARRIERS PUT BRAKES ON GLOBAL E-SALES

Reality curbs B2B's great expectations

BY JULIA KING

By 2002, most business-to-business exchanges expect international buyers and sellers to make up 44% of all transactions, according to a new Forrester Research Inc. survey of 50 U.S. online marketplaces. But a reality check with several market makers last week indicates that projection may be just a bit lofty.

Incompatible country-by-country business practices, insufficient technology and an array of regulatory barriers are but a few of the hurdles that

B2B Exchanges, page 93

Yahoo case highlights jurisdiction problem

BY LEE COPELAND

A French court last week ordered Yahoo Inc. to prohibit the sale of Nazi artifacts — items such as daggers, uniforms and badges — from its auction site to users in France. While the court said Santa Clara, Calif.-based Yahoo will face daily fines if it fails to comply, the enforceability of that ruling and Yahoo's response to it are both in question.

The case underscores the emerging wrangle over Internet jurisdiction and how to resolve legal conflicts that arise

Yahoo, page 93

RUDY WINSTON

RESTRUCTURING STAFF COMPENSATION can be the hardest part of merging IT departments, says Don Mann, vice president of application development at PepsiCo Business Solutions Group, a shared service.

MERGER HEADACHES

Some corporate mergers have been called off because of IT incompatibilities. Others should have been called off, but weren't. So this week, *Computerworld* offers a Special Report on the role CIOs should play in the pre-merger "due diligence" phase. We identify the key questions to ask about IT architecture and show how to spot the time bombs that could later destroy the financial benefits of a merger. And even if the technology meshes, the blending of two IT salary structures can be a daunting management challenge.

Special Report begins on page 40.

STAMPEDE MAY FOLLOW .MESS

Landgrab for new domains expected

BY PATRICK THIBODEAU

The problem with the decision to add seven new top-level domains is that no one really knows whether they will be a gift or a curse. Will the addition of domains like .biz and .museum make it easier to navigate the Internet, or will the process be more confusing? The answer is far from clear, say analysts and end users.

The Internet Corporation for Assigned Names and Numbers this month selected registries to run seven new domains: .biz, .info, .name, .pro, .museum, .aero and .coop. The new domains aren't expected to come online until the middle of next year.

Companies are expected to

Domain Names, page 16

NONTECHIES TAPPED FOR IT JOBS

Fast-track training used at Freddie Mac

BY JULEKHA NASH

Earlier this month, Freddie Mac successfully added 16 IT workers to its ranks in just 11 weeks. It did so using an innovative approach that it plans to turn to again in January.

The McLean, Va.-based mortgage aggregator isn't looking outside to fill these slots. Rather, it's transforming a select group of its own business workers into IT employees through a fast-track training program.

The company, known formally as Federal Home Mortgage Corp., has so far spent between $600,000 and $700,000 on the initiative to train seasoned employees to fill vacant technology positions, said Bill Ledman, senior vice president of information systems and services at Freddie Mac.

"It's not uncommon for virtually everyone to have open technology positions for a while. Here we have a group of people who are very smart. Some of them have strong aptitude for systems work," he said.

In the 11-week training program, students learn about technology through classroom instruction, computer-based

Freddie Mac, page 16

In the Rough

Tips for making recruitment

- Screen applicants with an aptitude test.
- Assign senior-level IT workers as mentors.
- Use a combination of classroom learning, Web instruction and team projects.

NEWSPAPER

[illegible] 124

U M I

PO BOX 904

ANN ARBOR MI 48106-0904

Quick, Who Offers The Best Tools For DB2?

Computer Associates. That's who.

CA is one of the industry's leading vendors of tools for DB2 for OS/390, and is a true, one-stop shop for all of your IT needs. CA has a broad range of solutions that enable you to manage your applications and maximize the return on your DB2 investment in Performance Management and Analysis, Database Administration, Data Availability, Backup and Recovery, and Application Development.

CA provides proven solutions for DB2, that will ensure successful implementation and management of all of your business-critical applications, including third-party ERP applications running on DB2 for OS/390.

Solutions for DB2 for OS/390

REDUCE COSTS		GAIN COMPETITIVE ADVANTAGE		PROVIDE PROACTIVE MANAGEMENT
Database Administration	**Data Availability**	**Backup and Recovery**	**Application Development**	**Performance Management**
Streamline administration tasks	Reduce or eliminate downtime	Keep data secure and reliable	Accelerate development cycles	Monitor critical resources
Concurrently manage multiple databases	Perform online reorganization	Recover specific objects or entire databases	Integrate legacy data with new applications	Improve data retrieval
Alter and migrate database objects	Quickly load and unload data	Maintain business profitability	Generate error-free SQL code	Optimize database tuning efforts

CA Solutions for DB2 for OS/390 give you complete control of your mission-critical information

CA recently completed its portfolio of DBA tools by adding IMS database solutions to its product portfolio. Don't be held hostage by other tool vendors when CA can offer a single vendor solution across a multiple database environment, complete with an aggressive value proposition, and conversion services. Just send an e-mail to rescueprogram@cai.com for information on CA's Rescue Program and your no obligation product conversion analysis.

CA Rescue Program

And remember, when you think DB2, think CA.

CA Solutions for DB2 for OS 390

For more information, call 1-800-850-7528 Ext. 100, or visit our website at www.cai.com

COMPUTER® ASSOCIATES
Software superior by design.

© 1999 Computer Associates, International, Inc. Islandia, NY 11749. All product names referenced herein are trademarks of their respective companies.

BACKUP EXPRESS

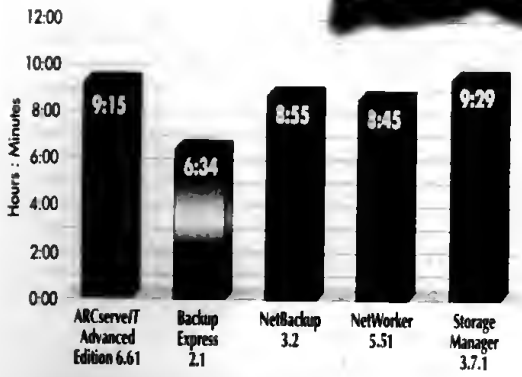
Chosen the Best Enterprise Backup Solution

Independent Test Results

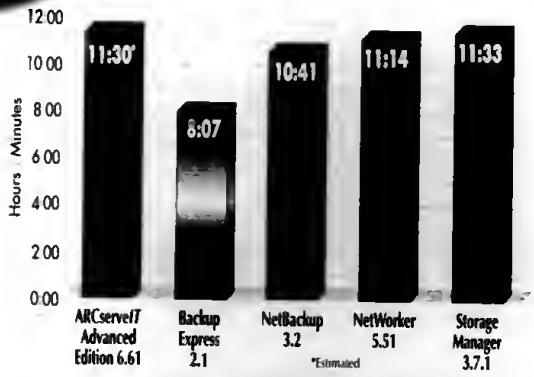
"Taking into consideration all the test factors, including scalability and support, I give the overall edge to Backup Express for its excellent performance and midrange pricing."

"Backup Express' backups and restores were faster than those of the other products."

Tom Iwanski, senior product reviewer, *Windows 2000 Magazine* Lab Report (June 2000)



Fastest Backup



Fastest Restore

For a FREE copy of the Lab Report or to learn more about Syncsort's Backup Express, visit www.syncsort.com/B0cwb or call (201) 930-8200.

syncsort

50 Tice Boulevard · Woodcliff Lake, NJ 07677
(201) 930-8200
www.syncsort.com

UPLIFTING IDEA

Once regarded as nothing more than a fantasy sprung from the imaginations of science fiction writers, a space elevator could become reality by the end of the century, scientists say. Page 74

A NEW GENERATION

Technical schools revamped their programs years ago, but the first wave of students is just starting to graduate. Techies like Vincent Kondaveeti now have marketing and finance skills built into their IT backgrounds. Page 87

COMPUTERWORLD THIS WEEK

NOVEMBER 27, 2000

NEWS 6

6 **USERS CAN SAVE** big bucks in software license fees by moving to IBM's A900 mainframes, a new Gartner report predicts...

6 **A NEW STUDY FINDS** that competitive intelligence software packages that claim to do it all usually can't.

7 **ONLINE TOY COMPANIES** heef up their resources for the holidays in hopes of avoiding last year's problems.

7 **FTC WARNS** more than 100 online retailers not to make holiday shipping promises they can't keep.

8 **INTERNET VOTING** beckons as an alternative to this year's mess in Florida.

12 **A MOVIE IS DELIVERED** from studio to theater via satellite for the first time.

12 **THE SPECTRUM WARS** heat up as educational broadband licensees decry the prospect of losing frequencies.

14 **E-MAIL MARKETERS** bridle at being called spammers and having their messages blocked.

14 **BULGARIAN BUG HUNTER** finds another vulnerability in Microsoft's Internet Explorer.

MORE

Editorial/Letters.....32, 33
How to Contact CW.....92
Shark Tank.....94
Company Index.....92

BUSINESS 39

SPECIAL REPORT

40 **MERGERS POSE RISKS** on the business, technical and career fronts. We look at the latest on how to prepare for your next one — or recover from your last one.

52 **WIRELESS ADS** are gaining steam in the U.S., but do they cost more than they're worth?

54 **SUCCESS RELIES** on the same factors in the New Economy as it always has for traditional companies.

54 **WOMEN HAVE COME** a long way in technology, but many were left behind by the Web revolution, says one women's listserv founder.

56 **J.C. PENNEY STRIVES** to connect all its customer data but finds linking multichannel sales data a mammoth task.

58 **GLOBETROTTING CAN BE** locrative for U.S.-based IT consultants, but cultural baggage can bog them down more than IT problems.

TECHNOLOGY 65

66 **MICROSTRATEGY** and Aether Systems team up to give users access to corporate data wherever they go.

67 **GM CTO TONY SCOTT** discusses a new Web portal that gives workers access to benefits data from home.

SECURITY JOURNAL

70 **JUDE DOWNLOADS** hacker tools to see just how vulnerable his system is.

EXEC TECH

72 **SPEECH RECOGNITION** software from Lernout & Hauspie gets a thumbs up from reviewer Joy Blake.

76 **USERS TELL** how they found the right security services to fit their needs.

80 **CONTENT MANAGEMENT** tools offer a lifeline for swamped webmasters.

QUICKTUNV

82 **CHIP MULTIPROCESSING**, with two processors inside each CPU, will soon be a commercial reality.

ONLINE

'Tis the season to take photos. Online managing editor **Sharon Machlis** (left) looks at three sites that process and print your digital photos and rates her experiences with each one in the latest installment of the E-Commerce Chronicles. *www.computerworld.com/ecommerce*

And speaking of rating Web sites, *Computerworld.com* is asking readers to tell us about their own online shopping experiences. *www.computerworld.com/shoppingsurvey*

Caroline Oberg, founder and CEO of Boston-based business-to-business consultancy ODAC, shares her views on what to look for when building a successful business model online. *www.computerworld.com/ecommerce*

OPINIONS

32 **MARK HALL** says content management could be the most crucial aspect of your B2B strategy.

32 **DICK HUDSON** feels that the CIO should be considered an equal to the CFO.

33 **DAVID MOSCHELLA** describes several criteria to consider if you want to sell content over the Web.

35 **DAN GILLMOR** writes that the election debacle in Florida offers a valuable lesson for how IT should interact with end users.

35 **MICHAEL GARTENBERG** says Palm could lose more market share if it doesn't begin delivering some real innovation in its handheld devices.

62 **JOE AUER** advises IT organizations to be well prepared if they entertain vendor offers of big year-end price breaks.

94 **FRANK HAYES** urges that in the spirit of giving, IT should help end users connect their new high-tech gadget gifts to corporate databases.

AT DEADLINE

Report Confirms Carnivore Risk

An edited version of an independent study of the FBI's Carnivore software, released last week by the Department of Justice, confirmed fears that the tool can be used to collect data on innocent people. The report said the tool isn't powerful enough to monitor "almost everyone with an e-mail account" or individuals as they surf the Web. But privacy advocates expressed concern about the potential for sweeping data collection. "Incorrectly configured, Carnivore can record any traffic it monitors," the report stated.

NetWare Sales Slide

Novell Inc. posted fourth-quarter revenue of $273 million, up $3 million from the previous quarter but down from $345 million for the same quarter last year. Packaged software sales declined by $243 million, or 47%. Revenue from NetWare servers was down 7% from the previous quarter to $112 million. For fiscal 2000, revenue for NetWare was down 24%.

Short Takes

Tokyo-based NTT DOCOMO INC. last week was in the final stages of talks to acquire a stake in Redmond, Wash.-based AT&T WIRELESS GROUP, a company source confirmed. . . . Global communications and IT spending reached $2.1 trillion last year, and should break the $3 trillion mark by 2003, according to a study released last week by the WORLD INFORMATION TECHNOLOGY AND SERVICES ALLIANCE. . . . Cologne, Germany-based DEUTSCHE LUFTHANSA AG kicked off a mobile check-in service for airline passengers with Wireless Access Protocol phones who travel with electronic tickets to any of 70 destinations. (For more airline wireless coverage, see page 10.)

Correction

In the Emerging Companies supplement to the Nov. 13 issue of *Computerworld*, the name of the managing director of Zona Research Inc. was misstated. The correct name is Martin Marshall.

Gartner: Moving to New IBM Mainframes Should Reduce Users' Software Costs

Says bigger users and fast-growing shops could benefit most from licensing option

BY JAIKUMAR VIJAYAN

Large mainframe users could save thousands of dollars per month in software fees by signing up for IBM's recently introduced Workload License Charges (WLC) pricing option, according to an upcoming report from Stamford, Conn.-based Gartner Group Inc.

But there are important caveats: To qualify for the full cost benefits, customers must first move to IBM's new zSeries 900 mainframe hardware, run the z/OS operating system in full 64-bit production mode and use the company's new IBM License Manager (ILM) technology, said Mike Chuba, author of the Gartner report.

"You'll really need to meet all three criteria to get the best bang for the software buck," Chuba said.

IBM announced its WLC pricing as part of the launch of its z900 range of 64-bit mainframe systems in early October. The hardware is expected to ship next quarter, and z/OS is expected to ship early in the second quarter.

Meanwhile, the ILM technology — which can be used to measure software usage, among other things — should become available sometime in the third quarter of next year.

Use-Based Fees

Under WLC pricing, fees are based on actual software use and not on the total hardware capacity. Currently, the fees for running most software on a mainframe depend on the size of the overall system — generally, the larger the system, the more users pay for the software, regardless of actual use.

In comparison, WLC gives users several opportunities to save on software costs, according to Chuba.

For instance, a company can save as much as $250,000 annually simply by loading z/OS on a test partition on the z900 — even though all of the production applications may still be based on the current-generation OS/390 operating system, he said.

Similarly, customers running mixed mainframe workloads such as DB2, CICS, MQSeries and IMS should be able to see savings of nearly $1 million annually over current costs, depending on the size of the system the software is running on, Chuba said.

But users should consider several factors, he cautioned. For one thing, the software savings may not always offset the cost involved in moving to the new platform. Another major consideration is that WLC is geared more toward lowering the cost of growth rather than cutting existing costs.

WLC also makes the most sense in very large mainframe shops — those with more than 1,000 MIPS of installed capacity — or those that are growing very rapidly, Chuba said. The benefits are much less tangible with smaller configurations.

Bill O'Donnell, a senior analyst for the state of Wisconsin, is reviewing the cost benefits of moving to the z900. Though he foresees savings, O'Donnell said it's still unclear whether all users will benefit equally. However, he said, after speaking with IBM, he believes that at the very least, his software costs won't increase until 2003 as a result of upgrading to the new platform.

Savings Scenarios

The following scenarios from Gartner Group show the impact of z/OS and IBM's license management technology on monthly software costs:

Current environment:
- 9672 models in a Parallel Sysplex, 340 millions of service units (MSU)
- **Parallel Sysplex License Charge (PSLC) cost: $177,000 per month**

Scenario 1:
- Upgrade to all 9672 models, 440 MSUs, 88% CPU use
- **PSLC cost: $202,000 per month**

Scenario 2:
- Upgrade to zSeries 900s, along with z/OS and ILM; 440 MSUs; 88% CPU use
- **WLC cost: $180,000 per month**

SOURCE: GARTNER GROUP INC., STAMFORD, CONN.

Study Finds Intelligence Software Lacking

Most packages fall short on analytics, other capabilities

BY DAN VERTON

Although most vendors of competitive intelligence software claim that their products can do it all, few actually perform as advertised, and most fall far short of user expectations, according to a study released last week.

Cambridge, Mass.-based consultancy Fuld & Co. published the study, titled "Intelligence Software Report 2000."

Fuld reviewed more than 170 software packages for the competitive intelligence market. Of the 170 products reviewed, only a dozen were found to offer enough functionality to warrant immediate consideration — and none of those provided complete support for a company's competitive intelligence program, according to Fuld.

Unlike business intelligence, which focuses on customers, suppliers and other strategic issues, the competitive intelligence market is focused on processing information about a company's external environment, such as a rival's pricing strategy or the financial impact of political turmoil in a key foreign market.

According to the report, software packages should support the full spectrum of the competitive intelligence cycle, which includes planning and direction, published information, primary source collection, and analysis and reporting.

Not Yet Satisfactory

In addition to offering support for only a few steps in the intelligence cycle, nearly all of the software products failed completely in supporting data analysis, according to the Fuld report.

Likewise, most products require a great deal of tailoring, and most claim to offer out-of-the-box capabilities when in fact they don't, the report said.

"The software industry is a long way from delivering a satisfying business or competitive intelligence solution," the report states.

Melanie Wing, head of competitive intelligence at First USA Bank NA in Wilmington, Del., said she agrees with Fuld's assessment.

"Most of the packages that I have looked at have really just been fancy libraries and don't have the platform and functionality to provide a complete solution," said Wing. "It would be useful to have some sort of software tool that provides some identification of key trends."

Still, Wing added, competitive intelligence professionals' ability to analyze data isn't necessarily a capability "that could or should be replicated by a software package."

According to Wayne Eckerson, director of education and research at the Data Warehousing Institute in Bethesda, Md., the findings of the Fuld study are also applicable to today's business intelligence tools.

While most business intelligence tools are more mature than their competitive intelligence counterparts, they still have shortcomings in terms of analytics and their capabilities for marketing-analysis and campaign management, said Eckerson.

Santa's Watching Retailers

Online toy retailers work to avoid last year's fulfillment blunders

BY MARC S. SONGINI

LOOKING TO AVOID last year's mistakes, online toy retailers are beefing up their supply-chain activities to make this Christmas a merrier one.

E-HOLIDAY 2000

Last year's nightmare before Christmas is already legend, with tales of online toy retailers unable to fulfill orders, going broke, getting sued or fined, or purchasing too much or too little inventory.

"Toys is probably the toughest category to go after on [the Web]," said Paul Huppertz, an analyst at PricewaterhouseCoopers in New York. There are many problems specific to this market, he said, such as the toys themselves, which vary in size and packaging types.

What will count this year is accurate product data throughout the entire supply chain, from supplier to customer, said Kevin Silverman, an analyst at ABN Amro Inc. in New York.

In fact, a survey of 62 retailers conducted this fall by Gomez Advisors Inc. in Lincoln, Mass., found that 81% of respondents were planning to have real-time inventory management during this holiday season.

In the toy sector, the ball is primarily in one court: the one where eToys Inc. and Paramus, N.J.-based Toysrus.com Inc. — now an Amazon.com Inc. partner — play head to head. (Other Internet-based toy peddlers, such as Toytime Inc., didn't make it past last season.)

Toysrus has the branding of a brick-and-mortar store, and it now has the fulfillment firepower of Seattle-based Amazon, with which it signed a deal in August. It has made some progress since last year, when it was hit by a class-action lawsuit and a government fine for failure to deliver on time (see related story below).

THIS YEAR, toy sellers have new allies and are girding for battle online.

Meanwhile, Amazon reported charges of $39 million in inventory for toys and electronic items that didn't find buyers last Christmas.

This year, with its new Toysrus partnership, Amazon will handle the Web front-end, customer service and delivery portions of the business, while Toysrus will procure, manage and supply most of the inventory. According to a Toysrus spokesman, the company's goods are already sitting in Amazon warehouses.

Both companies declined to offer specifics on their supply-chain preparations, but two analysts said Toysrus and Amazon have linked their systems to streamline replenishment.

At Los Angeles-based eToys, which claims to have fulfilled 99% of its holiday orders on time last year but experienced thousands of late deliveries, the company's stock price has dropped by as much as 90% during the past year.

Not Toying Around

To ward off a repeat, eToys has turned inward, beefing up its warehousing capabilities and IT resources. It upgraded its Web site with 64-bit Intel servers that can handle 1.6 million hits per day, according to an eToys spokesman. On the back end, its Oracle-based database system can now handle 1 million transactions daily.

The system can process 200,000 orders and handle up to 250,000 inventory updates each day, enabling customers to view availability in real time, the spokesman said. The company has also expanded from three to six e-mail/call centers and added new software and systems to enable buyers to track their orders.

EToys is also handling all its fulfillment this year. Last year, it used Fingerhut Cos., a Minnetonka, Minn.-based direct marketing firm, to fulfill roughly half its orders. The company has also added two state-of-the-art distribution facilities, one of which is partially automated.

Even with those improvements, how the online toy stores will fare this holiday season remains to be seen. But one thing is certain: If a buyer doesn't get his toy delivered on time, the retailer involved "has alienated a customer for life," Huppertz said.

FTC Warns Online Retailers to Fulfill Shipping Promises

Agency monitoring Web sites to prevent consumer complaints this holiday season

BY LINDA ROSENCRANCE

The Federal Trade Commission (FTC) is warning more than 100 online retailers that they had better not make holiday shipping promises they can't keep.

To avoid the spate of consumer complaints it received about late deliveries during last year's holiday season, the FTC is sending letters to the electronic retailers telling them that they shouldn't make "quick-ship claims" they can't fill just to entice consumers to their sites.

The letters will also explain that merchants could be fined $11,000 for each violation of the rule, said Heather Hippsley, a spokeswoman for the FTC's Bureau of Consumer Protection.

Earlier this year, the FTC sued seven companies for such violations, citing a regulation called the Mail or Telephone Order Merchandise Rule. That rule spells out the requirements for making delivery promises and refunds (see chart). The seven companies agreed to pay a total of $1.5 million in fines.

Of those retailers — CDNow Inc., KBkids.com Inc., Macys.com Inc., The Original Honey Baked Ham Company of Georgia Inc., Patriot Computer Corp. and Toysrus.com Inc., as well as the now-defunct Minidiscnow.com — some received many more orders than they anticipated and had problems processing them, despite having enough inventory on hand, according to the FTC. None sent out notices informing customers that shipments wouldn't arrive as promised.

Surfing, Searching

More recently, FTC spokesman Eric London said, the agency conducted a "surf" of more than 200 Web sites, looking at the shipping promises the sites were making as the holiday shopping season gets under way. The FTC found that more than 100 of the sites made quick-ship claims, assuring consumers that in-stock items usually ship within 24 to 48 hours after an order has been placed. The FTC declined to name the companies on the list.

London said the FTC will be monitoring certain Web sites to see if they're complying with the rule.

Harry Wolhandler, an analyst at ActivMedia Research LLC in Peterborough, N.H., said there's no reason why online retailers should have shipping problems this year, particularly if they pay close attention to their inventories (see related story above).

"They should know by now what they have coming from their vendors," Wolhandler said. "And they should have the ability to project that information to their Web site in real time to comply with [order] requests."

Richard Sherman, vice president of visioneering at Dallas-based EXE Technologies Inc. and a former analyst at AMR Research Inc. in Boston, said online retailers should have been focused on setting up systems to ensure speedy deliveries — or to alert customers when their orders are going to be delayed — for the past six months to a year.

CDNow, Patriot Computer and Toysrus.com — which formed a partnership with Seattle-based Amazon.com Inc. in August — are among those that fall into that camp, according to executives at those companies.

"[But the smartest thing] an e-tailer can do is not make any [shipping and delivery] promises he can't keep," Sherman said.

AT A GLANCE

Playing by The Rules

The FTC's merchandise shipping rule includes the following requirements:

- Merchants must base shipment claims on facts, not hopes.
- If a retailer makes a good-faith claim it's unable to fulfill, it must notify customers of the delay within the original shipment time. The retailer must also give customers a revised shipping date, plus the right to cancel a transaction and a "full and prompt refund" if customers aren't satisfied with the new date.

Arizona, California Pilot Voting Over the Internet

But cost will be an issue in wider rollouts, even if e-ballots could improve process

BY LEE COPELAND AND DAN VERTON

As a supervisor for Maricopa County in 1993, Betsey Bayless spent $6 million on then-state-of-the-art voter punch-card scanning machines.

But Maricopa was one of only five counties in Arizona with cash for the newest technology; the other 10 counties still used much older tabulating machines.

Seven years later, Bayless is the secretary of state in Arizona, and she's exploring the possibility of electronic balloting using a computer. A pilot project there and one in California received promising results this fall.

No Overvoting

"You cannot overvote like we're seeing in Florida," said Bayless. "If you vote twice for one office, it will refuse to accept your ballot."

But while electronic voting could help election officials avoid snafus such as those marring this year's presidential election — double voting on a butterfly ballot, poorly punched cards and painfully slow hand recounts — the costs associated with switching to the new systems may prevent the ballot box from going electronic anytime soon.

Positive Reaction

The head of the California Internet Voting Task Force, Alfie Charles, said mouse-driven, point-and-click voting systems drew positive reactions from both voters and elections officials, but he noted that replacing all 100,000 voting machines in California would prove cost-prohibitive.

Bayless said she will meet with election officials in her state this week to discuss the costs of moving forward with electronic balloting.

Arizona and California used computer-based systems designed by VoteHere.net Inc. in Bellevue, Wash., and laptop computers from Compaq Computer Corp. In both trials, voters had to verify their identity with election officials, then cast an electronic ballot on the computer.

VoteHere.net uses a shared public-key security scheme, which encrypts each electronic ballot. The key for decrypting the ballots is shared among election officials, so that no one party can view the actual ballot. "It's like firing a nuclear missile," said Christopher Baum, an analyst at Gartner Group Inc. in Stamford, Conn. "At least two people have to agree that it's a good idea."

BETSEY BAYLESS: With electronic voting, "you cannot overvote, like we're seeing in Florida."

Web-based balloting, where consumers cast their vote via a browser from home or other remote locations, faces more security and legal hurdles.

Rick Valelly, a political science professor at Swarthmore College in Swarthmore, Pa., said he would laud a shift to computer-based voting but thinks it should still be done at a polling place.

Valelly contended that absentee voting and remote online voting diminish the civic importance of casting one's vote in person and in the presence of one's neighbors. But in places where problems such as election fraud and location make it difficult to host traditional elections, Web-based systems provide a welcome alternative. Brazil, for example, has been using electronic systems since 1995 (see story, below).

For the past few years, the U.S. Department of Defense, whose employees make up a large percentage of absentee voters, has been studying the use of the Internet for voting.

The Defense Department used it successfully for the first time in this year's presidential election, albeit on a small scale, with a pilot project.

Some 84 military personnel, including 38 from Florida's Okaloosa County and 14 from Florida's Orange County, cast their votes using the Internet, said Glenn Flood, a Pentagon spokesman.

Baum said he anticipates that all 50 states will have piloted a computer-based voting system by the next national election in 2004. "Paper ballots get lost, re-marked and destroyed; it's a nightmare for security," Baum said. "It is almost impossible to come up with a system that is worse than what exists now."

Computerworld reporter Michael Meehan contributed to this story.

Brazilians Vote Electronically

Since 1995, when Unisys Corp. won a contract to provide an automated voting system for 252 cities in Brazil, and the following year, when Unisys supplied 77,000 voting machines to collect 35 million votes, the country has been on a more automated path for elections than the U.S.

Two subsequent contracts to expand the Brazilian voting system to 105 million voters and 300,000 machines went to Taiwan-based Procomp Informatics Ltd.

According to Bob Cook, the vice president for Latin American business at Blue Bell, Pa.-based Unisys, every adult in Brazil is required by law to vote. The country needed a system that would eliminate a history of fraud in its national elections and that could get around any illiteracy barriers for the voters, he said.

The machines also needed to be reprogrammable for local elections.

"In Brazil, with 77,000 units, it was logical for us to go after the business, but California is the only state which might be large enough to make it worthwhile by itself," he said. "Whether the federal government will step in and take charge like they did in Brazil is something we don't know at this time."

In the U.S., Cook observed, elections are decentralized down to the state and county level.

– *Michael Meehan*

IT Workers at Oxford Health Consider CSC's Job Offers

150 employees have until Dec. 1 to decide

BY KIM S. NASH AND LUCAS MEARIAN

Some of the IT staffers at Oxford Health Plans Inc. are weighing their job options after the health maintenance organization officially announced a major outsourcing deal with Computer Sciences Corp. (CSC) last week.

Oxford said the 150 IT workers affected by the agreement will all be offered jobs at CSC that would become effective on Dec. 1, when the Trumbull, Conn.-based HMO is due to start transitioning some of its key technology services to CSC. Included in the deal are Oxford's data center, help desk, desktop support and network management operations. The company's IT workforce totals 440.

The five-year contract, with a value estimated at $270 million to $330 million, wasn't a surprise to Oxford's IT group.

As reported previously, the HMO's staffers were told of the planned move at a Nov. 6 meeting with CSC officials and were promised job offers, although specifics weren't provided at that time.

Employees who accept positions with El Segundo, Calif.-based CSC will get salaries and benefits that are "comparable" to what they have now, according to Oxford's announcement of the agreement.

The HMO isn't expected to offer any severance packages to workers who reject the CSC jobs.

According to a source inside Oxford's IT group, most of the job offers appear to include salaries that are slightly higher than the current ones, to make up for drops in other aspects of compensation such as retirement plans and vacation accrual.

"[We] will lose a number of key benefits, principally any unvested stock options and unvested ... 401(k) [contributions]," said the source, who hasn't decided whether to sign on with CSC.

The affected IT staffers will also have to move to CSC's facilities in Norwich, Conn., which is about 50 miles away from Oxford's data center. Oxford and CSC said the transition process is expected to be completed by December 2001.

Ups and Downs

The IT group at Oxford has been through numerous ups and downs, as well as new managers, since a botched 1996 migration to homegrown software for managing the HMO's membership and processing claims. Oxford officials didn't return calls seeking additional comment by press time.

In a separate announcement issued by CSC, Charles Schneider, Oxford's president and chief operating officer, said the agreement "will help us reduce our costs and upgrade our technology capabilities."

Your business survived the blizzard of '96.

The flu epidemic of '98.

But will it survive a network upgrade in '01?

Simple? Unbelievable, isn't it?

3Com SuperFast Ethernet

Business is booming. But your network's about to bust. Fortunately, there's 3Com's new line of Gigabit Ethernet Switches and Gigabit Etherlink Server NICs. All engineered to give your network a boost by providing massive bandwidth to support increasing network demand. And all completely compatible with your current infrastructure to exploit the Internet to its fullest. (And not a moment too soon.) Just talk to your 3Com reseller or click 3Com.com. Home. Office. Beyond.

3com

Simple sets you free.

BRIEFS

Vietnam Pursues Software Exports

The Vietnamese government has announced tax-free status for foreign and local software companies operating in the country. The move is the latest in a series of initiatives aimed at building – almost from scratch – a globally competitive national software industry capable of reaching $500 million worth of exports by 2005. Companies won't pay export tax on software products and services for a four-year period and can also import high-tech equipment related to software development tax-free. Software firms will also be given preferential treatment in matters relating to value-added tax, the government said.

Lucent's Shares Dip

Lucent Technologies Inc.'s shares fell 14% Nov. 21 in response to news that it adjusted its revenue downward by $125 million and its earnings by 2 cents for its fiscal 2000 fourth quarter, which ended Sept. 30. The Murray Hill, N.J.-based telecommunications company also announced it couldn't confirm financial guidance for the current quarter.

Ford Covers Its Assets

Ford Motor Co. will begin deployment in January of TS.Census asset management software for its 100,000 desktops worldwide. Ford in Dearborn, Mich., will use the software to automate hardware and software discovery and to track assets for 80,000 desktops in the U.S. and another 20,000 worldwide, said a spokesman for TS.Census maker Tally Systems Corp. in Lebanon, N.H.

Compaq Adds Linux To ProLiant Servers

Compaq Computer Corp. last week announced that it will offer its ProLiant DL360 and ML330 servers preinstalled with Research Triangle Park, N.C.-based open-source vendor Red Hat Inc.'s Linux 7.0. The cost of the servers won't go up with the added software, and Compaq said it will give users a free support period to help with installation.

Travel Firms Won't Commit On Wireless

Airlines, others say there are too many such devices to settle on one

BY MICHAEL MEEHAN

HAVING BROKEN into the wireless world this spring with a Palm application that allows travelers to check flight status, UAL Corp.'s United Air Lines Inc. has now made it possible for Web-enabled phone users to book flights.

The Chicago-based firm began taking the wireless bookings two weeks ago and plans to add a rebooking tool within the next three months that would allow passengers to move flights up or back depending on their schedules.

The news is indicative of an industry that's moving on multiple fronts to enable tech-savvy customers to interact with companies via multiple wireless devices. "We are going to try to be very much device-independent," said Dan Black, director of e-commerce systems at United NetWorks, the airline's technology business division in Chicago. "We just don't know which ones will win out."

Too Much, Too Soon

Such trepidation is causing United and others to move with caution in the wireless arena for fear of committing too many IT resources too early to technologies that may turn out to be nothing more than the flavor of the day.

Last December, Swissair AG became the first airline to offer a wireless check-in system that lets travelers navigate their way to planes using only a Web-enabled phone. But the Zurich-based company doesn't plan to expand the system beyond a limited test program.

Gerhard Romanescu, Swissair's vice president of customer care management, voiced skepticism about marrying the airline's entire multinational check-in system to a single external technology such as the Wireless Application Protocol, which is being used as part of the airline's test program.

Romanescu said frequent fliers and other premier Swissair customers do regularly use the wireless check-in system, but he questioned whether a larger group of its customers would show a similar adoption rate. "How many people will really use this?" he said. "We don't know. We'd rather let it slowly grow if there is really a request from our customers."

Black said United has found that its most frequent and valuable customers are the ones adopting the wireless technology, which has driven the company to expand into that realm.

John Prial, director of strategy at IBM's Pervasive Computing division, said he believes the future for all of these companies lies in what IBM calls "transcoding," through which a middleware layer translates a single message for transmission across multiple devices.

Black said United has reviewed such technology but is skeptical about its use. Rather, the airline has contracted with Geoworks Corp. in Alameda, Calif., to translate its flight-status paging messages to protocols used in the U.K.

"This gives me the opportunity to be flexible in the future, and it reduces my investment in terms of cash and staff development time," Black said.

Building a Backbone

United Air Lines recently made a booking tool on Web-enabled phones available to its customers. It joins what is becoming a family of wireless services for the airline:

Web-phone booking, flight status and flight notifications

Flight status and availability on the Palm VII, as well as the ability to get upgrades for frequent fliers

A paging service that notifies fliers of changes in flight times or gate status

Dual Phone/Handheld Devices Near Release

Will ship early in '01

BY MATT HAMBLEN

Ladies and gentlemen: Start your smart phones!

Three new cell phones that double as personal organizers have been announced for shipment early next year, offering mobile users the chance to carry one device instead of two.

Analysts predict the pricey smart phones, which cost $500 to $600 in the U.S., will sell next year mostly to the early-adopter crowd that wants to carry just one device and that they may become mainstream in two to three years.

The latest device in the convergence trend will be formally announced today by Japan-based Kyocera Corp., which bought the handset division of Qualcomm Inc. The Kyocera Smartphone is estimated to start at $499 and operates on Code Division Multiple Access (CDMA) networks.

Its organizer runs on a Palm operating system, Kyocera officials said.

In form and basic functions, the Kyocera handheld is similar to the R380 World from LM Ericsson Telephone Co., which was announced earlier this month.

Both new handhelds place the keypad for the phone on the bottom, with a portion of the organizer visible. When the user flips down the keypad, a much larger view of the organizer's screen is available, so the user can read longer e-mail messages, search for phone numbers and dates, browse the Web or send instant messages.

The R380 operates over Global System for Mobile Communications (GSM) networks, which are available in the U.S. but don't have as large a coverage area as CDMA, said analysts. The Ericsson smart phone uses the operating system of London-based Symbian Ltd., which is more popular than the Palm is in Europe. The phone will sell for about $600, Ericsson officials said.

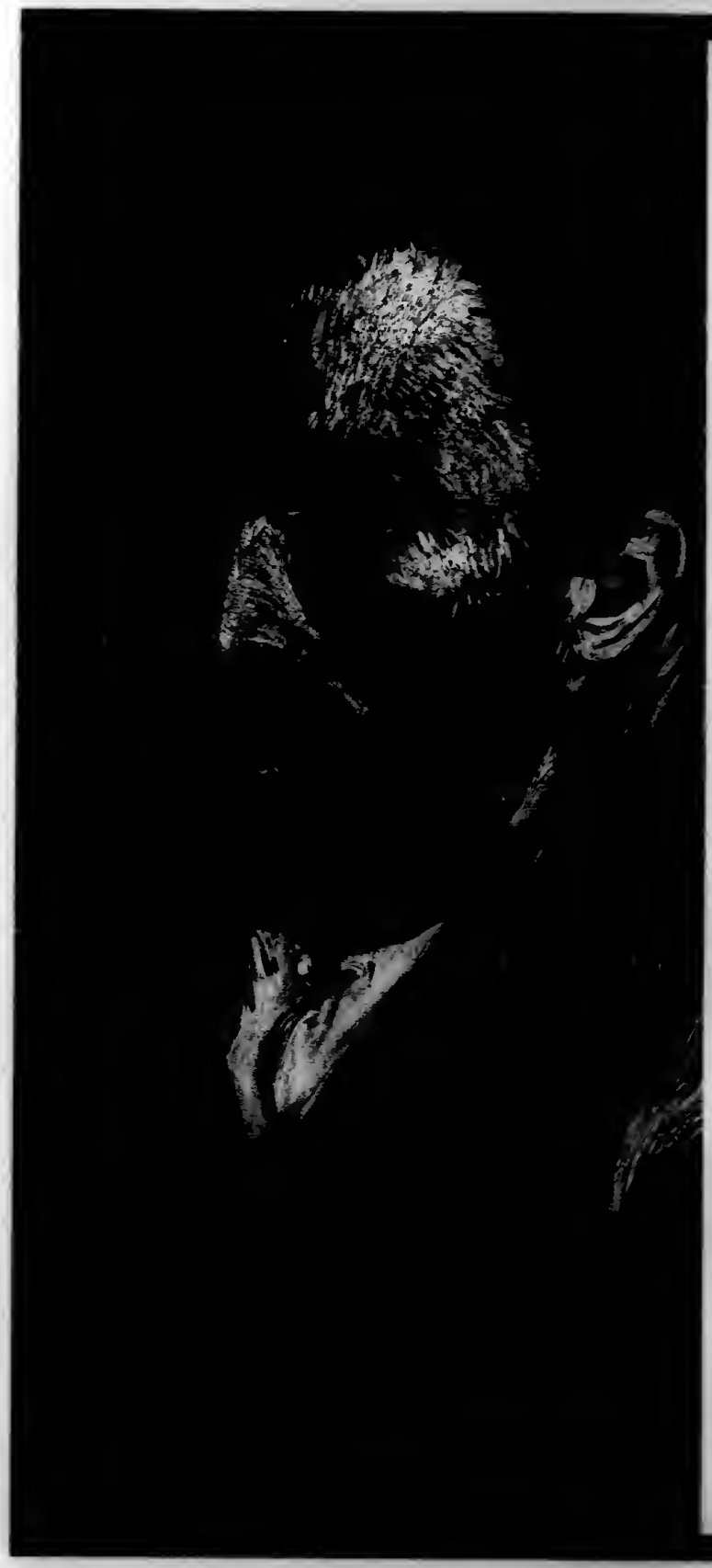
The Kyocera and the R380 device are expected to sell in the U.S. starting early next year.

The third smart phone announced last week, the 9210 Communicator from Nokia Corp. in Finland, won't be available in the U.S. It incorporates a personal organizer and GSM phone in a clamshell design.

Not Sold

Alex Hu, vice president of audit technology at The Chase Manhattan Corp. in New York, said he is "not ton thrilled" about the latest announcements and that he might wait until smart phones that incorporate Microsoft Corp.'s Pocket PC operating system, dubbed the Stinger, hit the streets late next year. He said he would be more impressed with a Windows-based operating system. "We're eyeballing all these devices for all sorts of potential uses," Hu said.

KYOCERA CORP.'S Smartphone



I'D GIVE MY LEFT EAR TO GET THAT EMAIL BACK.

It's enough to drive you crazy. You inadvertently send an email containing your company's sensitive or confidential information.

But there's no need to over-react. Because now you can get your email back. With MailRecall™ from Authentica.

MailRecall lets you manage the digital rights over your email at all times – even after you've sent it. You decide who sees it, what they do with it, which parts of it they see, how long they see it for, who they can share it with, whether they can print it, save it or forward it – in short, everything about how it is used and distributed.

Why take chances? Find out more about MailRecall.

For a free trial or to order an evaluation kit for your company, visit us at **www.authentica.com**.

Because when people discover email they can get back, they're all ears.

authentica
protect your information

877.532.8060
781.487.2600

Satellite Delivery of Feature Films Debuts

Pilot project bounces Bounce *to New York theater in high-resolution digital format*

BY BOB BREWIN

When the movie *Bounce* bounced off a communications satellite and into the AMC Empire Theatre in New York's Times Square earlier this month, it marked the first use of a satellite to deliver a feature film to a theater in high-resolution digital cinema format.

Bounce was transmitted to the theater as a pilot project by a new unit of the satellite systems division of Seattle-based The Boeing Co. The unit, Cinema Connexion by Boeing, plans to use its expertise in satellite technology, including encryption and compression, to dramatically change the distribution of movies, as well as presentations of sporting and other high-profile events. Mark Gill, president of Miramax Films Corp. in Los Angeles, called the satellite delivery of *Bounce* a "landmark day for the movie business — the beginning of a better way to distribute motion pictures."

Long Time Coming

Rick King, head of corporate communications at Kansas City, Mo.-based AMC Entertainment Inc., which owns the Empire Theatre, said it took approximately 10 hours to transmit *Bounce* because of the large size of the compressed file — about 50GB. However, he noted, when the system becomes commercially available next year, transmission time won't matter "because in the 10 hours it took to go to one theater, you could send the same movie to 2,000 theatres" using the satellite feed, King said.

That fits in with Boeing's plans, according to David Baker, co-director of the Cinema Connexion unit, which wants to set up a "global distribution system" for digital cinema. Boeing plans to roll out the system in stages starting in the second quarter of next year, in collaboration with Topeka, Kan.-based QuVis Inc., which supplies the video servers and compression technology.

These servers will feed projectors developed by the digital imaging division of Dallas-based Texas Instruments Inc. Boeing also plans to set up a network operations center in Hollywood to encode and secure films before transmitting them from an on-site uplink, Baker added.

The economics of digital delivery will help drive its adoption, according to both Boeing and film industry sources. King said it costs roughly $2,000 for each print, and a spokesman for GC Cos. in Chestnut Hill, Mass., estimated that shipping costs for each film physically delivered to a theater is $300. Baker said this works out to annual distribution costs of about $1.2 billion for the movie industry, a sum he said could be cut to around $500 million with satellite delivery.

Asked to assess the quality of the digital version of *Bounce* compared with 35mm film, King said that in his view, "it's better than film. It has increased clarity," especially as the feature continues its run over the holiday season. Repeated showings of a film result in deterioration, King explained, whereas a digital movie retains the same quality, regardless of the number of showings.

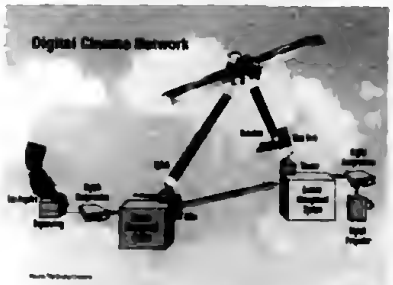
Bob Rast, vice president of business development at Dolby Laboratories Inc. in San Francisco and chairman of the Society of Motion Picture and Television Engineers' digital cinema committee, agreed. "With digital cinema, you are seeing a pristine image every time you go to the theater ... especially as there are varying qualities of release prints. I think [this technology] is very competitive with film."

But Dave Dawson, director of technology at the Motion Picture Association of America (MPAA) in Los Angeles, said that although digital cinema technology is good, it can be improved.

"We do not believe digital cinema has reached its peak," Dawson said. "We want to work on standards that will provide an enhanced theatrical experience."

Ian McMurray, a spokesman for TI's digital imaging division, said the company believes it can meet the MPAA's requirements for improved quality.

"We're still working with prototypes," he said. "We are continuing to develop the technology, and we know we can make it better."



BOEING'S CINEMA CONNEXION unit envisions setting up a global distribution system for digital cinema.

3G Proposals Could Broaden Digital Divide

School, broadband wireless operators decry spectrum plan

BY BOB BREWIN

Educational institutions and broadband fixed-wireless operators view proposals by the Clinton administration to open up their portion of the airwaves for advanced, high-speed mobile data services as a threat to their plans to deliver Internet services capable of bridging the "digital divide."

And they aren't the only ones. The fixed-broadband operators, such as Sprint Corp. and WorldCom Inc., also said they believe that a recent report by the Federal Communications Commission gives weight to their position.

That report, released Nov. 15, said third-generation (3G) wireless services, targeted for the same piece of spectrum used by schools and others for high-speed Internet connections, could cause "extensive interference." Moving the so-called Instructional Television Fixed Service (ITFS) would "raise technical and economic difficulties for the incumbents," the FCC report said.

The FCC and the U.S. Department of Commerce are due to deliver a report on which spectrum to allocate to 3G wireless services by Dec. 31, with an auction to take place no later than Sept. 30, 2002.

ITFS operations currently have 120 MHz of spectrum allocated nationwide. Commercial broadband, known as Multi-Channel Multipoint Distribution Service (MMDS), occupies 66 MHz. Commercial and educational operations are interleaved throughout the 2,500 to 2,690-MHz band.

Patrick Gossman, chairman of the Detroit-based National ITFS Association and director of University Television at Wayne State University, also in Detroit, said it would be "criminal" to reallocate the spectrum and make the MMDS and ITFS operators move to another band. The FCC more than 40 years ago licensed the spectrum to the ITFS and MMDS to provide one-way television services. (The addition of two-way data services is more recent.)

"We have the one technology that can easily bridge the digital divide today," Gossman said. "We can go into a rural area, set up a single [antenna] and provide broadband service to a 35-mile radius. This is the only technology that can bring high-speed Internet to a number of people not served by other carriers."

ITFS licenses cover all areas of the country "except for the middle of the desert," he said.

Jack Keithley, vice president of federal regulatory affairs at Sprint, which has invested more than $1 billion in MMDS, called the possibility of third-generation and fixed-broadband services sharing spectrum "impossible."

"Any segmentation [of the band] would be problematic," he said.

Keithley and Gossman also both disputed the efficacy of moving ITFS and MMDS operators to another portion of the spectrum. Gossman said pushing ITFS and MMDS to higher bandwidths would cut down the service area because higher frequencies travel shorter distances than lower frequencies. It would also increase the costs of covering the same area, he said.

Keithley said he believes one solution for third-generation wireless services is for mobile service providers to develop broadband services by more efficiently using the spectrum they already own.

Francis McInerney, a partner at North River Ventures, a venture capital firm in New York, said chances are remote that the FCC will get current spectrum holders to move to another band without hefty compensation. "People who own it know what it's worth and expect to be paid for it," he said.

AT A GLANCE

Critics' Corner

The arguments against adding 3G mobile services to the spectrum used by schools and commercial licensees include the following:

- Forcing the latter to change frequencies would reduce range and increase costs.
- Fixed wireless is in use now. 3G services are years away

www.powerware.com

Powerware

We build a UPS like lives depend on it.

invensys

And they often do.

Today, everything's riding on computer data and continuous operations, with no margin for error. But the modern power grid goes down an average of eight hours a year. That's a risk you can't take. You don't have to with Powerware. We have more than 37 years of proven experience protecting mission-critical customers like major airports and airlines around the world.

That expertise goes into our entire line of hardware, software and service. Powerware, formerly Exide Electronics, offers a full range of UPS products that protect everything from small- to mid-sized businesses to large data centers and ISPs. For more information, or to talk to our sales department, go to **www.powerware.com** or call **877-PWRWARE (877-797-9273).**

POWERWARE®
UNINTERRUPTIBLE POWER SYSTEMS

Online Marketers Stung by Spam Label

Phone and direct mail are much more intrusive, say marketers

BY JENNIFER DISABATINO

Do some online marketers have a legitimate beef with the spam label?

E-mail marketing companies, including Harris Interactive Inc. and 24/7 Media Inc.'s subsidiary Exactis.com Inc., which pride themselves on sending opt-in e-mail to subscribers, have been stung by recent charges by a non-profit spam monitoring group that they're spammers. They have said that indiscriminate e-mail marketing hurts their industry and is ultimately ineffective, so they have no vested interest in bombarding mailboxes with new product offers.

"Online marketing is being held to a much stronger standard," said Christopher Todd, an analyst at Jupiter Research, a Jupiter Media Metrix Inc. subsidiary in New York. "Don't assume that [spam] is a problem only in the online world. It's a problem in the off-line world as well."

"Brand names wouldn't be caught dead doing spam," said Kate Leahy, a spokeswoman at New York-based Bigfoot Interactive, which does e-mail marketing for Fortune 500 firms. While Leahy acknowledged that there can be some glitches in e-mail marketing protocols, she said, "I don't think those are things we won't overcome in the next year."

Punished for Others' Actions

Blocking e-mail marketing campaigns from companies that have minor glitches hurts the ability of marketers — and the companies they serve — to effectively and responsibly target customers, she said.

"There are more [unknown] spammers out there that are sending me e-mail every day," she said. And privacy groups would be well served to target smaller, lesser-known spammers that don't maintain the same standards as better-known marketing companies, she argued.

One observer said e-mail spam is better than getting phone calls at dinnertime. "Spam is much less disruptive than unsolicited commercial phone calls," noted David Ferris, research director at Ferris Research in San Francisco.

The reason online spam gets so much attention, Todd said, is because it's so cheap. According to an April report by Jupiter, the cost of creating an e-mail campaign is $1,000, vs. $20,000 for a direct-mail campaign. In addition, e-mail campaigns are faster to develop and responses come in quicker (see chart below).

Groups like Mail Abuse Prevention System LLC (MAPS) in Redwood City, Calif., say we need rules governing how e-mail is sent and privacy protections for the recipients. A MAPS spokeswoman last week said she was under a court-mandated gag order and couldn't comment for this story.

This summer, Rochester, N.Y.-based online polling company Harris Interactive was placed on MAPS's Realtime Blackhole List (RBL) for allegedly sending out unsolicited, bulk commercial e-mail, better known as spam, asking recipients to participate in its opinion polls. Internet service providers such as America Online Inc. use the RBL in deciding whether to block bulk e-mail from getting to their customers. Last week, Denver-based Exactis was placed on the RBL. On its Web site, New York-based 24/7 Media said it has "the world's largest permission-based, opt-in e-mail database."

Both companies have won legal battles to resume their e-mail marketing for the customers who opt in, or request the e-mails, said analysts, but the notoriety of the cases casts doubt upon the effectiveness and the ability of companies to acquire and retain customers through digital marketing.

Marketing Channels

E-mail is more effective than direct mail in acquiring and retaining customers.

METRICS	E-MAIL	DIRECT MAIL	E-MAIL	DIRECT MAIL	SPONSORSHIPS	BANNER ADS
Conversion	5%	3%	2.5%	1%	2.5%	2.5%
Cost/conversion	$6	$18	$114	$66	$67	$128
Execution time (weeks)	3	3	3	12	3	3
Response time	48 hours	3 weeks	48 hours	3 weeks	48 hours	48 hours
Up-front creative costs	$1k	$20k	$1k	$20k	$1k	$3k

It's Net Time for Techie COO

Earlier this month, **Nick Maturo**, 52, left behind a career of more than 20 years at Kraft Foods International to become chief operating officer at Foodtrade.com Inc., a Miami-based business-to-business electronic marketplace serving the food and agriculture industries. His two-decade tenure at Kraft included a CIO role plus management positions in procurement, logistics, customer service and finance.

Computerworld's Julia King spoke with Maturo about his midcareer switch.

MATURO sees new opportunities on the Web.

Q: How will your experience in IT and as a CIO serve you in your new role as chief operating officer at a business-to-business exchange?

A: The role I played in the past is clearly important. It's not so much the technology but the ability to understand the capabilities of technology. There are a set of complexities behind marketplace deployments, but it's important to be disciplined and not try to be everything to everyone.

Prior to being a CIO, I was in charge of supply chain, procurement and customer service at Kraft. I've had operations experience. Prior to that, I worked in marketing and consumer and industrial goods.

The logic and motivation behind my decision [to take on the post] is that on-the-ground experience plus the ability to figure out how traditional ways of doing business can be deployed better around the world [via the Internet].

Q: Did you ever expect to make a midcareer move to another company, much less a dot-com?

A. If I go back three years to my early exposure to the Internet, I walked out of more meetings [about doing business on the Internet] because we weren't comfortable that the Internet was ready for prime time.

In the last two years, we've seen that [the Internet] is ready to move to the real world. Many of us who worked for brick-and-mortar companies clearly now see the opportunities the Internet and Web-based applications offer, so it's a logical move into this business.

Q: Are there pitfalls involved in a CIO moving to a COO post?

A. One of the concerns I have is that people tend to automate what they do — to take what they do and put it on a mainframe, an AS/400 or a PC. But the right answer is to simplify and automate. The proposition is not to automate what exists but to better define how we want to do business and find a technology solution to that.

Bug Hunter Finds Another IE Hole

BY JAIKUMAR VIJAYAN

Bulgarian bug hunter Georgi Guninski last week discovered yet another vulnerability in Microsoft Corp.'s Internet Explorer Web browser that could let an attacker take control of a victim's machine.

The vulnerability basically allows attackers to execute malicious code on a victim's computer by exploiting .chm files — a compressed help file format. According to Guninski, the browser vulnerability allows attackers to find and access temporary Internet files on other users' machines. Temporary Internet files are cached copies of Web pages that Explorer stores on a user's hard disk. Caching allows the page to be loaded faster the next time the user visits the page.

The vulnerability allows attackers to find such temporary files on another user's machine and to cache .chm files in them. The .chm files can then be used to execute malicious code. Attackers could potentially take full control of a victim's machine in this manner, Guninski said.

The chances of the vulnerability being exploited are slim, said Russ Cooper, an analyst at TruSecure Corp. in Reston, Va.

Users who follow basic security procedures — such as disabling scripting and not opening executable files from unknown persons — should remain fairly safe, according to Cooper.

Online Marketers Stung by Spam Label

Phone and direct mail are much more intrusive, say marketers

BY JENNIFER DISABATINO

DO SOME online marketers have a legitimate beef with the spam label?

E-mail marketing companies, including Harris Interactive Inc. and 24/7 Media Inc.'s subsidiary Exactis.com Inc., which pride themselves on sending opt-in e-mail to subscribers, have been stung by recent charges by a nonprofit spam monitoring group that they're spammers. They have said that indiscriminate e-mail marketing hurts their industry and is ultimately ineffective, so they have no vested interest in bombarding mailboxes with new product offers.

"Online marketing is being held to a much stronger standard," said Christopher Todd, an analyst at Jupiter Research, a Jupiter Media Metrix Inc. subsidiary in New York. "Don't assume that [spam] is a problem only in the online world. It's a problem in the off-line world as well."

"Brand names wouldn't be caught dead doing spam," said Kate Leahy, a spokeswoman at New York-based Bigfoot Interactive, which does e-mail marketing for Fortune 500 firms. While Leahy acknowledged that there can be some glitches in e-mail marketing protocols, she said, "I don't think these are things we won't overcome in the next year."

Punished for Others' Actions

Blocking e-mail marketing campaigns from companies that have minor glitches hurts the ability of marketers — and the companies they serve — to effectively and responsibly target customers, she said.

"There are more [unknown] spammers out there that are sending me e-mail every day," she said. And privacy groups would be well served to target smaller, lesser-known spammers that don't maintain the same standards as better-known marketing companies, she argued.

One observer said e-mail spam is better than getting phone calls at dinnertime. "Spam is much less disruptive than unsolicited commercial phone calls," noted David Ferris, research director at Ferris Research in San Francisco.

The reason online spam gets so much attention, Todd said, is because it's so cheap. According to an April report by Jupiter, the cost of creating an e-mail campaign is $1,000, vs. $20,000 for a direct-mail campaign. In addition, e-mail campaigns are faster to develop and responses come in quicker (see chart below).

Groups like Mail Abuse Prevention System LLC (MAPS) in Redwood City, Calif., say we need rules governing how e-mail is sent and privacy protections for the recipients. A MAPS spokeswoman last week said she was under a court-mandated gag order and couldn't comment for this story.

This summer, Rochester, N.Y.-based online polling company Harris Interactive was placed on MAPS's Realtime Blackhole List (RBL) for allegedly sending out unsolicited, bulk commercial e-mail, better known as spam, asking recipients to participate in its opinion polls. Internet service providers such as America Online Inc. use the RBL in deciding whether to block bulk e-mail from getting to their customers. Last week, Denver-based Exactis was placed on the RBL. On its Web site, New York-based 24/7 Media said it has "the world's largest permission-based, opt-in e-mail database."

Both companies have won legal battles to resume their e-mail marketing for the customers who opt in, or request the e-mails, said analysts, but the notoriety of the cases casts doubt upon the effectiveness and the ability of companies to acquire and retain customers through digital marketing.

	RETENTION	ACQUISITION
Conversion	5%	3%
Cost/conversion	$6	$18
Execution time (weeks)	3	3
Response time	48 hours	3 weeks
Up-front creative costs	$1k	$20k

SOURCE: ©2000 JUPITER RESEARCH, A JUPITER MEDIAMETRIX COMPANY, NEW YORK

It's Net Time for Techie COO

Earlier this month, **Nick Maturo**, 52, left behind a career of more than 20 years at Kraft Foods International to become chief operating officer at Foodtrader.com Inc., a Miami-based business-to-business electronic marketplace serving the food and agriculture industries. His two-decade tenure at Kraft included a CIO role plus management positions in procurement, logistics, customer service and finance.

Computerworld's Julia King spoke with Maturo about his midcareer switch.

MATURO sees new opportunities on the Web.

Q: How will your experience in IT and as a CIO serve you in your new role as chief operating officer at a business-to-business exchange?

A: The role I played in the past is clearly important. It's not so much the technology but the ability to understand the capabilities of technology. There are a set of complexities behind marketplace deployments, but it's important to be disciplined and not try to be everything to everyone.

Prior to being a CIO, I was in charge of supply chain, procurement and customer service at Kraft. I've had operations experience. Prior to that, I worked in marketing and consumer and industrial goods.

The logic and motivation behind my decision [to take on the post] is that on-the-ground experience plus the ability to figure out how traditional ways of doing business can be deployed better around the world [via the Internet].

Q: Did you ever expect to make a midcareer move to another company, much less a dot-com?

A: If I go back three years to my early exposure to the Internet, I walked out of more meetings [about doing business on the Internet] because we weren't comfortable that the Internet was ready for prime time.

In the last two years, we've seen that [the Internet] is ready to move to the real world. Many of us who worked for brick-and-mortar companies clearly now see the opportunities the Internet and Web-based applications offer, so it's a logical move into this business.

Q: Are there pitfalls involved in a CIO moving to a COO post?

A. One of the concerns I have is that people tend to automate what they do — to take what they do and put it on a mainframe, an AS/400 or a PC. But the right answer is to simplify and automate. The proposition is not to automate what exists but to better define how we want to do business and find a technology solution to that.

Bug Hunter Finds Another IE Hole

BY JAIKUMAR VIJAYAN

Bulgarian bug hunter Georgi Guninski last week discovered yet another vulnerability in Microsoft Corp.'s Internet Explorer Web browser that could let an attacker take control of a victim's machine.

The vulnerability basically allows attackers to execute malicious code on a victim's computer by exploiting .chm files — a compressed help file format. According to Guninski, the browser vulnerability allows attackers to find and access temporary Internet files on other users' machines. Temporary Internet files are cached copies of Web pages that Explorer stores on a user's hard disk. Caching allows the page to be loaded faster the next time the user visits the page.

The vulnerability allows attackers to find such temporary files on another user's machine and to cache .chm files in them. The .chm files can then be used to execute malicious code. Attackers could potentially take full control of a victim's machine in this manner, Guninski said.

The chances of the vulnerability being exploited are slim, said Russ Cooper, an analyst at TruSecure Corp. in Reston, Va.

Users who follow basic security procedures — such as disabling scripting and not opening executable files from unknown persons — should remain fairly safe, according to Cooper.

> *Few things are more uncomfortable than a network*

Continued from page 1

Freddie Mac

training, and individual and team projects. The firm also assigns senior IT workers to mentor and help students make the transition from the classroom to their new positions.

Freddie Mac selected mostly risk managers and analysts in the firm's single-family mortgage purchase division for the program. But next year, it plans to open the opportunity to the entire corporation, said Ledman. Candidates interested in the training program must first take an aptitude test.

"When we picked people, we wanted to make sure that they had a good chance of succeeding," said Ledman.

Interest among Freddie Mac employees has been high. The company has twice as many workers on the waiting list as the program can accommodate, Ledman said.

Bob Markovitz, a former valuation analyst, recently completed Freddie Mac's training program. He said he had been interested in improving his technical skills for some time but lacked the time and money to do so. He said the program was challenging and fast-paced, adding that he takes work home at night to get up to speed on IT projects.

The program, Markovitz added, will also help Freddie Mac employees meet the needs of their customers, since so much of the company's work is technology-driven.

While many companies encourage business staffers to gain IT skills, most firms lack formal training programs to help employees make the transition, said analysts.

"It makes sense to mine the strengths of your closet techies as much as possible," said Kazim Isfahani, a senior analyst at Cambridge, Mass.-based Giga Information Group Inc.

The state of Texas offers a similar IT training program for employees who have worked there for at least two years, but Isfahani said he hasn't heard of such opportunities at any other private companies.

But transforming techies into Web programmers doesn't come without its challenges. Ledman said students need to be prepared that they might not learn everything they need in 11 weeks and that most of their training will actually occur on the job.

Barbara Gomolski, research director at The Gartner Institute in Eden Prairie, Minn., said using aptitude tests and other methods for screening individuals is key to ensuring success in this type of program. But in spite of that, she added, it may be a year or more before employees are productive.

THE GRADUATING class of Freddie Mac's IT career transition program.

And even though candidates are screened, some people "just won't catch on," she warned. "You're not going to have a 100% success rate."

HR: Timing Is Everything In the War for IT Talent

BY JULEKHA DASH

In order to attract top IT performers in today's tight labor market, companies need to extend offers to candidates within one day of an interview. Otherwise, the prospect will go elsewhere, warned human resources professionals.

At the International Quality & Productivity Center's Recruiting and Staffing Summit in Scottsdale, Ariz., earlier this month, much of the discussion on the war for talent revolved around not how to find the best job candidates, but rather how to hire job seekers as soon as possible after the interview.

During his keynote presentation, John Sullivan, professor of human resources management at San Francisco State University, said candidates will reject an offer if they feel they are "jerked around in the interview process."

Patricia Schulz, director of human resources at Associated Banc-Corp. in Green Bay, Wis., said her firm would like to shorten the hiring cycle to a day or even a week, but it has to allow for enough time to check candidates' references and wait on the results of drug tests. In addition, some managers who don't realize how difficult recruiting is want to interview eight or nine candidates before extending an offer to anyone, said Schulz.

But Teresa Matzkin, lead recruiter at Lockheed Martin Corp. in Bethesda, Md., has helped galvanize the company's recruiting efforts to shorten the hiring cycle to just one day. Prior to the interview, candidates are given a Web address where they can download applications to fill out on their own time. A copy of the candidates' résumé is also posted on the company's intranet at least two days before the interview so hiring managers can prescreen potential hires.

Howard Rubin, a research fellow at Stamford, Conn.-based Meta Group Inc., said he agreed that taking too long to make offers can affect a worker's decision. Companies can lose roughly one-third of their candidates that way, said Rubin, who conducted interviews with 40 IT managers in September.

Continued from page 1

Domain Names

buy large swaths of .biz, .info and other names — but their primary goal will be to protect corporate trademarks.

"This is not created to make an average company's life easier — absolutely not," said Audrey Apfel, an analyst at Gartner Group Inc. in Stamford, Conn. "I think it makes life worse."

Obtaining the domains will be an expensive proposition: Gartner estimates that companies will spend around $70,000 to maintain a domain-name strategy that would include registering variants of the names they want to protect.

But whether companies will use the names they buy is unclear. In the commercial space, the .com vs. .biz argument "is kind of a moot point — .com is it," said David Scott Lewis, an analyst at Meta Group Inc. in Stamford, Conn.

"If .biz just becomes a mirror image of .com, then I don't know what real purpose it will serve," said Bruce Manning, an information systems manager at AMI Aircraft Seating Systems, a manufacturer in Colorado Springs.

The new domains are "probably going to be very confusing to everyone, at least to begin with," said Bobby Chowdhury, chief technology officer at United Media Inc. in New York. The domains may have some value down the road, but for now, Chowdhury said, he doesn't see it.

The group selected by Marina Del Rey, Calif.-based ICANN to run the .biz domain said it plans to make .biz what .com was originally intended to be — "a space on the Internet specifically for business," said Ken Hansen, director of corporate development at NeuStar Inc. in Washington. NeuStar, in a joint proposal with Melbourne IT Ltd. in Melbourne, Australia, will run the .biz registry through a recently created firm, NeuLevel LLC.

A .biz registrant will have to self-certify that it's a business or that it intends to use the domain for commercial purposes, said Hansen. Moreover, NeuLevel is proposing to ICANN that domain dispute-resolution procedures be amended to allow a business to challenge the ownership of a domain name if it isn't being used for commercial purposes, he said.

Richard Villars, an analyst at International Data Corp. in Framingham, Mass., said the new domains may improve the process users go through to find information on the Internet, as long as the new domains don't become corrupted with improper registrations. "Shortcuts like this ... will make life easier over time," he said.

But David Curle, a director and lead analyst at Outsell Inc., a consultancy in Burlingame, Calif., said he wonders how end users will know whether to type in .com or .biz or some other suffix. "The result is going to be a very haphazard collection of domains that is really going to create more confusion than anything else," Curle said.

While there's no doubt that speculators will also move in to buy these names, buying some of the new domains will be "extraordinarily risky," said Michael Mann, CEO of Bethesda, Md.-based RareDomains.com LLC, a company that sells domain names.

"Speculation in .com names is, for the most part, not profitable for most people," said Mann.

Land Rush

Who will own .biz and other potentially valuable domain names? That's an issue that hasn't been worked out, but NeuLevel, the company that won approval to run the .biz domain, has proposed a plan, subject to ICANN's OK.

ROUND-ROBIN: Registrars will submit a batch of registrations before the new domain goes live. The batches will be picked at random by the registry for processing. Once this process is completed, the registration process will go live.

Become a

Sitara Networks *can give you the divine ability to:*

...all within your network budget and resources.

SITARA
Networks

Windows 2000 ADVANTAG

The Web Magazine for IT Leaders Implementing Windows 2000 and Windows NT with Compaq Services and Solutions

Online this week:

POINT OF VIEW

The TaskSmart N-Series: Compaq and Microsoft redefining enterprise storage

Based on Microsoft Windows 2000 the new TaskSmart N-Series Network Attached Storage (NAS) appliance from Compaq makes it easy to deploy and manage advanced file storage.
www.windows2000advantage.com/pov/09-29-00_tasksmart.asp/300

TECH EDGE

Microsoft and Compaq take aim at ASP model

Microsoft and Compaq were at the recent IDG ASP World Conference with an impressive array of product and support offerings. This article looks at Microsoft and Compaq and the rapidly emerging ASP environment.
www.windows2000advantage.com/tech_edge/10-25-00_aim_at_asp.asp/300

Q & A

Microsoft VP Jim Ewel portrays Windows 2000's role in the business Internet

Jim Ewel, vice president, Windows .NET server marketing, has played an important role in some of Microsoft's prominent products. He discusses initiatives, which revolve around Windows 2000 and .NET.
www.windows2000advantage.com/qa/10-06-00_role.asp/300

COLUMNS

Implementing service levels key to .NET success

Microsoft recently unveiled its .NET platform in San Francisco. The .NET platform evolves the current DNA programming model into one that is more in tune with the World Wide Web.
www.windows2000advantage.com/columns/10-23-00_service.asp/300

CASE STUDIES

Windows 2000 fever can be infectious. Just ask Datareturn.com

After testing Microsoft Windows 2000 Advanced Server as part of Microsoft's Joint Development Program, Datareturn.com lost no time migrating its own Web site and customers' shared Web servers.
www.windows2000advantage.com/case_studies/09-18-00_infectious.asp/300

Q&A >

Brian Valentine: Chief cheerleader, driving force

Brian Valentine is a key player in Microsoft's Windows division, where, in addition to being "chief cheerleader," as he describes himself, he is also a driving force behind the evolution of Microsoft Windows 2000. A 13-year veteran of the company, he started as an engineering manager and worked his way up the ranks to manage the Microsoft Exchange and Microsoft BackOffice family product units. He recently spoke to Windows 2000 Advantage editorial director Bruce Hoard about the evolution of Windows 2000.

For the full story, visit: www.windows2000advantage.com/300

2000 GENERATION >

Aventis Pharma simultaneously implementing Windows 2000, Exchange 2000

Tackling a Windows 2000 implementation in itself is no easy task. Now imagine doing an Exchange 2000 rollout at the same time, while simultaneously upgrading hardware and the desktop – and you get an idea of the challenges currently faced by Aventis Pharma.

For the full story, visit: www.windows2000advantage.com/2000gen/11-13-00_aventis.asp/300

CASE STUDY >

Windows 2000 Group Policy can cut support costs, but requires up-front planning, training and testing

The Group Policy features within Microsoft Windows 2000 can make it easier to fine-tune user access rules and even lock down desktops so users can't fiddle with their systems. But moving to Group Policy from the Microsoft Windows NT 4.0 domain structure requires a lot of planning, training and testing.

For the full story, visit: www.windows2000advantage.com/case_studies/11-06-00_grouppolicy.asp/300

www.Windows2000Advantage.com/300

MOMENTUM SERIES >

As Windows 95 phases out, Microsoft and Compaq offer tools to ease the move to Windows 2000 Professional

Five years after its introduction, Microsoft Windows 95 is nearing retirement. For business customers still running Windows 95, upgrading to Microsoft Windows 2000 Professional will create far more stable and manageable client workstations. Microsoft and Compaq are offering a variety of software tools and services to ease the migration pains.

When Windows 95 was first introduced, it was a major leap in reliability and ease of use for Windows clients. But during the five years since, Microsoft has upgraded its PC operating system offerings with Windows 98, Windows 98 Second Edition (SE), Windows NT 4.0 Workstation, Windows Me and Microsoft Windows 2000 Professional, which Microsoft and Compaq are promoting as mainstream client platform for business professionals.

Now, those customers who have stuck with Windows 95 "are pushing real hard for Windows 2000," says Richard Ashe, manager of PC Lifecycle Solutions at Compaq. "Those are the people in a hurry."

They're hoping that the improvements in Windows 2000 Professional, which is based on Windows NT technology rather than the older Windows 3.x code base, will make users' PCs more stable, faster-performing and easier to manage over time. Acknowledging that software upgrades can be difficult and expensive, both Compaq and Microsoft are offering migration tools to ease the shift to Windows 2000 Professional as Windows 95 moves toward retirement.

For the full story, visit: www.windows2000advantage.com/momentum/11-06-00_95phaseout.asp/300

QUOTE OF THE WEEK >

"Third-party vendors all say they're Windows 2000 ready, but if you don't do a test, you'll be in trouble."

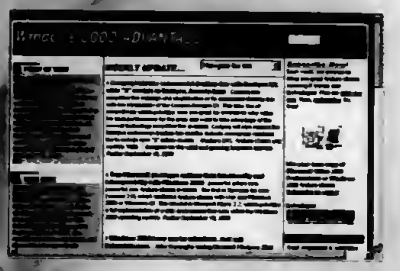
— John Wolfe
systems analyst in
Energy Wholesale Operations
Entergy Corp.

What is Windows 2000 Advantage?

The mission of Windows 2000 Advantage is to become your primary source of timely, useful information for planning and implementing Microsoft Windows 2000 on Compaq solutions and services.

Windows 2000 Advantage is a Web-only magazine because that lets us bring you, the IT leader, great stories that apply to your day-to-day work. We'll keep you up to date with a weekly e-mail alert so you don't miss a thing.

Windows 2000 Advantage is underwritten by Microsoft and Compaq. Its charter is to address the issues that most concern IT managers charged with keeping their companies on top of the latest and best solutions Microsoft and Compaq have to offer. Toward that goal, we offer a wide range of stories including case studies, columns and news to provide you with information you can't find anywhere else.



www.Windows2000Advantage.com/300

QUICKPOLL >

How long of a lifecycle should a client-based operating system have?

Cast your vote now at:
www.Windows2000Advantage.com/300

Microsoft COMPAQ

Produced by:

CEO: SAP Installation Caused Problems

But Petsmart says the SAP Retail system is 'now providing sound data'

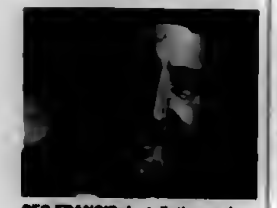
BY LUCAS MEARIAN

AN INSTALLATION of SAP AG's retail software completed last year by Petsmart Inc. created problems that were "far more than we anticipated" and that continue to affect the pet-supply retailer's business performance, according to Petsmart's top executive.

Phoenix-based Petsmart last week warned that the financial results for its fiscal third quarter ended Oct. 29 will be below expectations due partly to lingering problems related to the SAP Retail installation.

In a follow-up interview, Phil Francis, Petsmart's chairman, president and CEO, said difficulties stemming from the project "hurt us substantially."

Francis wouldn't comment on whether there were problems with the SAP applications themselves. But he said the most difficult part of the project involved getting SAP Retail to "play with other children"



CEO FRANCIS: Installation problems "hurt us substantially."

— meaning the process of integrating the SAP software with Petsmart's other systems. "I'd say we had problems with the connectivity to other software for about a year or so," Francis said. "We were in pretty rough shape [on application integration]." As a result, he added, the company limped through 12 to 15 months of delays in implementing the SAP Retail applications.

After the system went live last year, Petsmart experienced higher-than-expected "shrink levels" — a reference to inventory losses due to shoplifting and damaged items. In last week's announcement, Petsmart said "residual effects" from the implementation problems contributed to above-normal shrink levels in the third quarter.

Petsmart, which said it expects a total of $2.2 billion in revenue during its current fiscal year, is significantly larger than other U.S. retailers using SAP Retail, said Francis. At the time the decision was made to install the software, he noted, the firm needed to replace aging systems that weren't year 2000-compatible.

The company had the choice of buying older retail applications or going with more modern software like SAP Retail, Francis said.

He wouldn't say whether, in hindsight, he would make the latter choice again. But Petsmart said last week that the SAP system "is now providing sound data."

Petsmart was the second SAP Retail user to disclose in a matter of days that its earnings are being affected by an implementation of the software. Fabric retailer Jo-Ann Stores Inc. in Hudson, Ohio, recently said out-of-stock problems related to its use of SAP Retail played a role in reducing its third-quarter earnings.

A spokesman at SAP America Inc. said neither Jo-Ann nor Petsmart has criticized the SAP Retail software itself. Instead, he said, both companies have praised its value. And the fact that numerous large retailers have chosen SAP Retail is proof that it works, he added.

Jim Shepherd, an analyst at AMR Research Inc. in Boston, said vendors of enterprise resource planning (ERP) software such as SAP Retail aren't always blameless when users have problems. But delays in integrating ERP software with other applications are to be expected in big projects, he said.

Complex Projects

Installations of ERP systems are complex projects that usually involve major changes to the internal business processes of users, Shepherd said.

"Most companies have not undertaken projects of this magnitude [previously]," said Shepherd. "They rarely have the skills required, and they always underestimate the time and effort required to do it." Software installation hiccups can also be convenient excuses for poor business execution, he added.

Pets.com Promises Bonuses To Hold on to Top Executives

Bonuses awarded as Web retailer closes

BY TODD R. WEISS

Less than a month before Pets.com Inc. announced that it was going out of business, the company changed its employment agreements with 10 top executives to make them eligible for a "retention bonus" of as much as $225,000 under certain circumstances — including the liquidation that's now taking place.

The San Francisco-based online pet-supply retailer said earlier this month that it planned to shut down and try to sell off its Web site and other major assets after failing to find new investors or a buyer. That followed an Oct. 9 decision by the Pets.com board of directors to approve the new bonus arrangements, according to a third-quarter financial filing that was submitted to the Securities and Exchange Commission (SEC) on Nov. 16.

According to the filing, Pets.com Chairman and CEO Julia Wainwright and nine other executives will receive bonuses ranging from $75,000 to $225,000 if they stay until the liquidation of the firm is completed. The executives also would have been eligible for bonuses if they remained at Pets.com until next March or until the company found a new majority owner or received at least $10 million in new financing, whichever came sooner.

The bonus arrangements were detailed in letters dated Oct. 23 that were sent to each of the 10 executives and then included as part of the filing to the SEC.

The letters stated that the bonuses would "provide incentives for our key employees to continue in the service of the company notwithstanding the possibility of an acquisition or other similar transaction." The money would recognize past contributions as well as the executives' willingness to stay at Pets.com, the letters added.

Reached by phone at her home last week, Wainwright declined to discuss the matter. A Pets.com spokesman said all 10 executives are needed to complete the shutdown of the retailer's operations because of their different areas of expertise. Each has accepted the bonus offer and agreed to help close the company, he added.

In the filing, Pets.com said the success of its "wind-down depends in large part upon the company's ability to retain the services of certain of its current personnel or to attract qualified replacements for them." Retaining key employees "is particularly difficult under the company's current circumstances," the filing added.

Offers Aren't Unusual

Such bonus offers aren't unusual for firms that are in the kind of dire straits in which Pets.com finds itself, according to Jim Williamson, an analyst at International Data Corp. in Framingham, Mass.

But, he added, "I'm not sure I'm particularly comfortable with [the bonus arrangements] from an ethics standpoint."

"If you're a senior executive at a company that's going bankrupt, I think you have a fiduciary responsibility ... to make a proper exit," Williamson said. "I don't think you need to necessarily be [attracted] by bonuses ... in order to do what you should be doing anyway."

Kevin Noonan, an analyst at The Yankee Group in Boston, also said such retention bonuses aren't out of the ordinary. "[But] the unfortunate thing with this is that they appear to be doing it after the fact," when the shutdown of Pets.com was already in the cards, he said.

The timing of the deals creates "the feeling that they're not stay-on bonuses but a way to get some cash out to these people" to thank them for their previous work, Noonan said.

And claiming that all 10 executives are needed to wind down the company's operations may be "excessive," he added.

Due to get $75,000 bonuses are the vice presidents in charge of merchandising, distribution and customer service, among others.

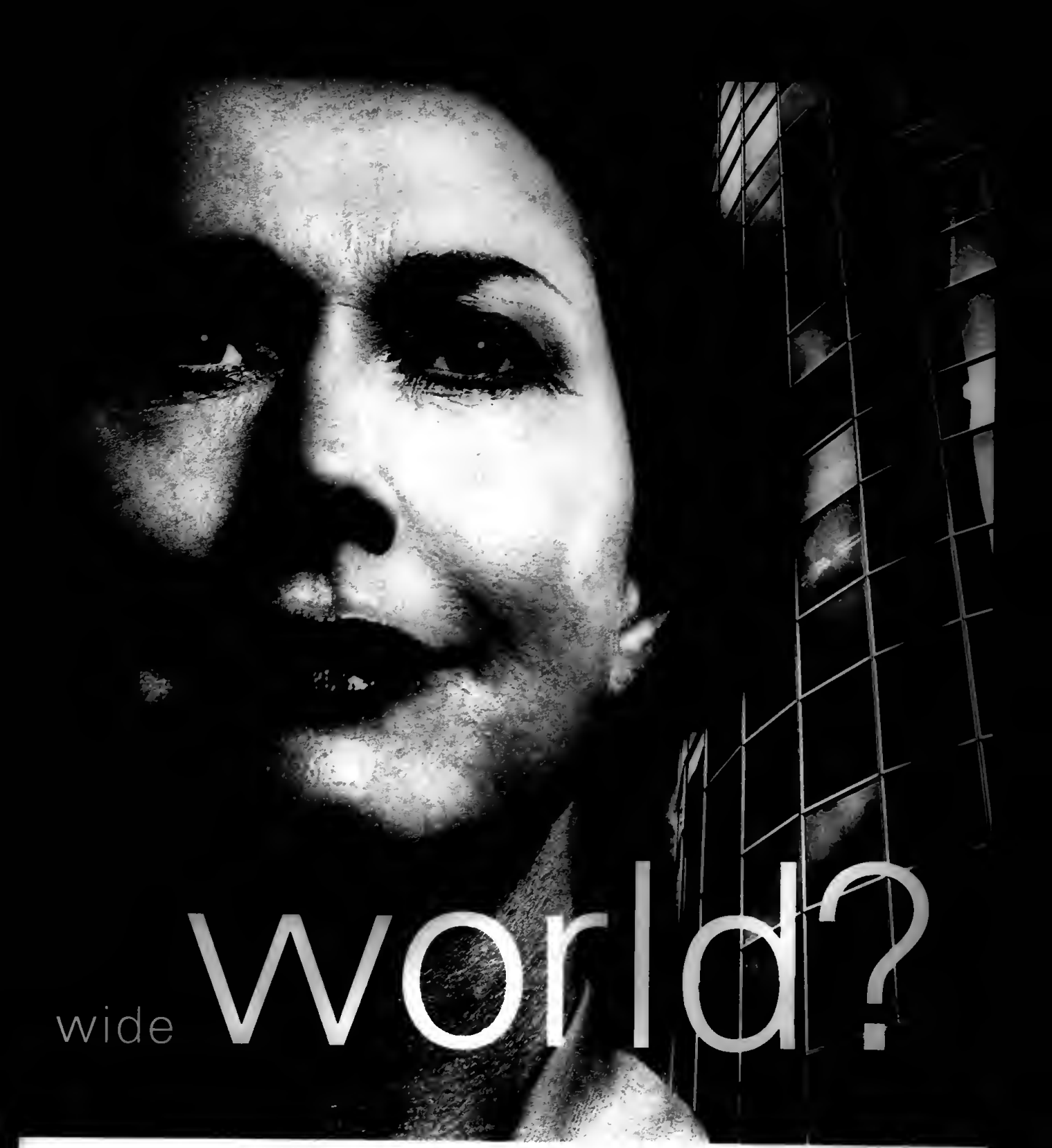
0 to 60 in one mouse click.

Precision Air
AC Power
DC Power
Site Monitoring
TVSS

Over 5,000 prizes are up for grabs at:

win.liebert.com

How can you extend your brand to the ends of the earth? To prevail in the Internet economy, you need an intelligent network that gives you the agility to flawlessly facilitate customer transactions at warp speed. An intelligent network that has the QoS and security to deliver Virtual Private Network solutions. An intelligent network with bet-your-business reliability. How can your network



become so intelligent? With Cisco Whether you're building your enterprise network or extending it with Cisco Powered Network services, we have the technologies and resources you need to transform your e-commerce capabilities. Discover all that's possible on the Internet at **www.cisco.com/go/InternetBusiness.**

CISCO SYSTEMS

EMPOWERING THE INTERNET GENERATION™

Companies Aim to Build Security Awareness

Slogans, posters and trinkets may seem like gimmicks, but they can be useful training tools for teaching employees

BY DAN VERTON

SECURITY

[illegible] security slogans [illegible] to [illegible] employees keywords [illegible] successful security [illegible] employees [illegible] to information security [illegible] behavior.

[illegible] New security policies often conflict with the [illegible] employees have done [illegible] for years. For example, [illegible] offices and departments that once operated with full and open information sharing are now being told that they must learn to control information, confront strangers who aren't wearing identification badges and refuse access to sensitive areas to anybody who can't produce identification — even the boss.

Industry experts and corporate trainers are relying more and more on slogans, posters, games, trinkets and rewards to raise awareness about the importance of information security and the ever-changing threats that companies face in cyberspace. And while these small reminders might not be the entire answer to changing employee behavior or to garnering senior management support, experts agree that they are important elements in an overall security program.

Playing Games

Charles R. Hudson Jr., security officer and information security project manager at Wilmington Trust Corp., a 2,700-employee asset management company in Wilmington, Del., said themes and slogans have worked very well in his security awareness program. This year's theme, says Hudson, is based around popular TV game shows. For example, [illegible] "Jeopardy" and "Wheel of Fortune" clues on security to late-night trivia [illegible].

Wilmington Trust [illegible] also includes awards to its employees who demonstrate security awareness [illegible]. Every Friday, jobs such as consistently logging off their computers before leaving work [illegible] are rewarded with candy bars, small cash prizes and other trinkets.

It's not about money, said Hudson, who spoke at this year's Computer Security Institute (CSI) conference in Chicago. Most of this stuff is 50 cents or less.

In addition to mandatory security briefings for new employees, Hudson said his program relies heavily on company newsletters and a security intranet site to get the word out. Therefore, company security policies and examples of security horror stories at other firms are just a few mouse clicks away, he said.

Dan Erwin, a security officer at The Dow Chemical Co., also uses horror stories from other companies to raise awareness and to spark senior managers' interest in security.

The best way to get management excited about a disaster plan is to burn down the building across the street, said Erwin, who recently won CSI's lifetime achievement award for security. "However, the best horror stories are your own," he added.

For example, Midland, Mich.-based Dow recently conducted a three-month e-mail review and found a significant amount of pornography on employee computers. Besides being an inappropriate use of company computers, visiting such Web sites is a security concern — hackers lurk in those places. The subsequent firing of 40 employees served as a wou[illegible] [illegible] and from senior managers were critical.

Begin with a fixed date, and from that point work backwards, advises Ogborn.

However, there's a lot of competition for attention in most companies where the security gurus must compete with human resources and other departments for employees' attention, said Ogborn.

At the University of Wisconsin in Madison, it's an "ongoing fight" to raise awareness among the school's 40,000 students and 20,000 faculty and staff members, said Jeffrey Savoy, a security manager on the university's new two-person incident-response team.

The university too, relies on poster campaigns — this year's theme was "Rules of the Road." But officials also plan to create online quizzes that users must take in order to log on to all university e-mail accounts. "I expect that within a year, it will be mandatory," said Savoy.

Health insurer and financial services company Aetna Inc. in Hartford, Conn., uses annual mandatory online scenario-based tests to maintain security awareness among all of its employees. The company says the tests work.

"We recognize that they must be informed on a regular basis through a number of mediums," an Aetna spokesman said, adding that employees receive a certificate when they finish the course. "This has been very successful for us, and we've reached a very high percentage of our audience," he said.

Alan Paller, director of the SANS Institute, a Bethesda, Md.-based research and education organization of more than 100,000 system administrators and security experts, said the Aetna example has been so successful that SANS is working on a replica of the mandatory online exams. However, technique is important, too.

"We found two major impediments to success: the wrong teachers and the wrong lessons," said Paller.

Security practitioners who specialize in IT security "are not the best communicators and they don't have interesting material, so they get preachy and boring and maddening," he said. Likewise, the training classes miss many of the people who need them most, such as salespeople and key marketing executives who travel a lot, said Paller.

Back of the Train

But not everybody agrees with the training gimmick strategy. "This is exactly why we got out of the security business and adjusted our focus to intelligence operations," said Mark Gembecki, chairman of WarRoom Research Inc., a consulting firm in Linthicum, Md. "The mission of corporate America is not good security. It is shareholder value, plain and simple."

"If software was subject to recall, like Firestone tires [were], for security defects, that would help elevate security in importance," said John Pescatore, an analyst at Stamford, Conn.-based Gartner Group Inc. "Until we see something like that, security will always be in the caboose [and not] in the locomotive."

Therefore, the challenge for many awareness programs is the corporate culture, said Winn Schwartau, founder of security consultancy Interpact Inc. in Seminole, Fla.

The answer, said Schwartau, is to determine your culture's boundaries and figure out what you can do within those boundaries.

"A business will have good security if its corporate culture is correct," said William Malik, vice president and research area director for information security at Gartner. "That depends on one thing: tone at the top. There will be no grassroots effort to overwhelm corporate neglect."

"Organizations don't change," said Melissa Guenther, an awareness specialist at Glendale, Ariz.-based LogOn Consulting Inc. "People change. And then people change organizations."

Protecting Your Assets

Examples of security policies in place at some companies:

- Require all new employees to sign **nondisclosure agreements** and other legally binding security agreements.
- Require all new employees to attend **introduction to security** briefings.
- Classify all **internal information** and set strict guidelines for its use and who has access to it.
- Require **use of encryption** for all internal and external communications.
- **Restrict access to software code** and other sensitive information and physical spaces based on need to know.
- Control password use by not allowing employees to use **the same password twice**.
- Require employees to **take mandatory online tests** and quizzes about security.

Companies Aim to Build Security Awareness

Slogans, posters and trinkets may seem like gimmicks, but they can be useful training tools for teaching employees

BY DAN VERTON

SECURITY

FROM colorful rulers with security slogans printed on them to candy bars left on employee keyboards in return for a successful security audit, companies are pulling out all the stops to do the one thing that really matters when it comes to information security: change behavior.

It's not easy. New security policies often conflict with the way employees have done their jobs for years. For example, offices and departments that once operated with full and open information sharing are now being told that they must learn to control information, confront strangers who aren't wearing identification badges and refuse access to sensitive areas to anybody who can't produce identification — even the boss.

Industry experts and corporate trainers are relying more and more on slogans, posters, games, trinkets and rewards to raise awareness about the importance of information security and the ever-changing threats that companies face in cyberspace. And while these small reminders might not be the entire answer to changing employee behavior or to garnering senior management support, experts agree that they are important elements in an overall security program.

Playing Games

Charles R. Hudson Jr., security officer and information security project manager at Wilmington Trust Corp., a 2,700-employee asset management company in Wilmington, Del., said themes and slogans have worked very well in his security awareness program. This year's theme, says Hudson, is based around popular TV game shows. For example, trainees play a version of *Jeopardy* that relies on security-related material for the clues.

Wilmington Trust's program also includes rewards for employees who demonstrate security awareness in their everyday jobs, such as consistently logging off of their computers before leaving work. That means free sodas and lunches, candy bars, small cash prizes and other trinkets.

"It's not about money," said Hudson, who spoke at this year's Computer Security Institute (CSI) conference in Chicago. "Most of this stuff is 50 cents or less."

In addition to mandatory security briefings for new employees, Hudson said his program relies heavily on a company newsletter and a security intranet site to get the word out. Therefore, company security policies and examples of security horror stories at other firms "are just a few mouse clicks away," he said.

Dan Erwin, a security officer at The Dow Chemical Co., also uses horror stories from other companies to raise awareness and to spark senior managers' interest in security.

"The best way to get management excited about a disaster plan is to burn down the building across the street," said Erwin, who recently won CSI's lifetime achievement award for security. However, "the best horror stories are your own," he added.

For example, Midland, Mich.-based Dow recently conducted a three-month e-mail review and found a significant amount of pornography on employee computers. Besides being an inappropriate use of company computers, visiting such Web sites is a security concern — hackers lurk in those places. The subsequent firing of 40 employees served as a "wonderful awareness program," said Erwin.

But the planning and the delivery methods of an awareness program are just as important as the horror stories and the slogans, said Kathryn Ogborn, a security awareness specialist at Federal Reserve Automation Services in Richmond, Va.

Ogborn used a theme ("Information security counts on you") and trinkets such as rubber flexballs with security reminders printed on them in her training sessions. But she said working with a fixed deadline for devising the program and getting approval from senior managers were critical.

"Begin with a fixed date, and from that point, work backwards," advises Ogborn.

However, there's a lot of competition for "airtime" in most companies, where the security gurus must compete with human resources and other departments for employees' attention, said Ogborn.

At the University of Wisconsin in Madison, it's an "ongoing fight" to raise awareness among the school's 40,000 students and 20,000 faculty and staff members, said Jeffrey Savoy, a security manager on the university's new two-person incident-response team.

The university, too, relies on poster campaigns — this year's theme was "Rules of the Road." But officials also plan to create online quizzes that users must take in order to log on to all university e-mail accounts. "I expect that within a year, it will be mandatory," said Savoy.

Health insurer and financial services company Aetna Inc. in Hartford, Conn., uses annual mandatory online scenario-based tests to maintain security awareness among all of its employees. The company says the tests work.

"We recognize that they must be informed on a regular basis through a number of mediums," an Aetna spokesman said, adding that employees receive a certificate when they finish the course. "This has been very successful for us, and we've reached a very high percentage of our audience," he said.

Alan Paller, director of the SANS Institute, a Bethesda, Md.-based research and education organization of more than 100,000 system administrators and security experts, said the Aetna example has been so successful that SANS is working on a replica of the mandatory online exams. However, technique is important, too.

"We found two major impediments to success: the wrong teachers and the wrong lessons," said Paller.

Security practitioners who specialize in IT security "are not the best communicators, and they don't have interesting material, so they get preachy and boring and maddening," he said. Likewise, the training classes miss many of the people who need them most, such as salespeople and key marketing executives who travel a lot, said Paller.

Back of the Train

But not everybody agrees with the training gimmick strategy. "This is exactly why we got out of the security business and adjusted our focus to intelligence operations," said Mark Gembecki, chairman of WarRoom Research Inc., a consulting firm in Linthicum, Md. "The mission of corporate America is not good security. It is shareholder value, plain and simple."

"If software was subject to recall, like Firestone, tires [were], for security defects, that would help elevate security in importance," said John Pescatore, an analyst at Stamford, Conn.-based Gartner Group Inc. "Until we see something like that, security will always be in the caboose [and not] in the locomotive."

Therefore, the challenge for many awareness programs is the corporate culture, said Winn Schwartau, founder of security consultancy Interpact Inc. in Seminole, Fla.

The answer, said Schwartau, is to determine your culture's boundaries and figure out what you can do within those boundaries.

"A business will have good security if its corporate culture is correct," said William Malik, vice president and research area director for information security at Gartner. "That depends on one thing: tone at the top. There will be no grassroots effort to overwhelm corporate neglect."

"Organizations don't change," said Melissa Guenther, an awareness specialist at Glendale, Ariz.-based LogOn Consulting Inc. "People change. And then people change organizations."

- Require all new employees to sign **nondisclosure agreements** and other legally binding security agreements.
- Require all new employees to attend **introduction to security** briefings.
- Classify all **internal information** and set strict guidelines for its use and who has access to it.
- Require **use of encryption** for all internal and external communications.
- **Restrict access to software code** and other sensitive information and physical spaces based on need to know
- Control password use by not allowing employees to use **the same password twice.**
- Require employees to **take mandatory online tests** and quizzes about security

How business

The great e-business shakeout is well under way. For those who didn't make it, our condolences. At least the end was quick.

For those who have made it, who broke the code and figured out how to build a truly viable e-business, our heartiest congratulations.

As it turns out, many of these successful companies–including the majority of the Fortune e-50–have built their e-businesses on an exceptionally strong foundation.

The BEA WebLogic® E-Business Platform.™

This award-winning set of innovative software and services is uniquely designed to help businesses rapidly develop and launch advanced e-commerce initiatives. It's an end-to-end solution that includes rich personalization and complete B2B integration. In fact, it's now the global standard by which all e-commerce software is measured.

Which explains why it's BEA's market-leading platform that powers Chase Manhattan, FedEx, Amazon.com, United Airlines, Wells Fargo, E★TRADE and over 6,500 other successful e-businesses. Find out how we can help yours. Visit us at www.bea.com.

bea™

www.bea.com

©2000 BEA Systems, Inc. How business becomes e-business and BEA WebLogic E-Business Platform are trademarks and BEA and WebLogic are registered trademarks of BEA Systems, Inc

NEW WORLD

FROM SERVICE PROVIDERS TO GLOBAL ENTERPRISES, NETWORK GROWTH IS A DAILY EVENT.

NEW SPACE RACE

HIGH-DENSITY RACK SERVERS PACK MORE SERVER INTO LESS SPACE.

NEW SERVERS

INTRODUCING THE xSeries 330 HIGH-DENSITY 1U RACK SERVER.

[@server]

For the next generation of e-business.

intel inside pentium® III

SPECS

IBM @server xSeries 330
1U rack design (just 1.75" high)
up to two-way Intel® Pentium® III
processor 1GHz' configurations

new cable-chaining technology
Light Path Diagnostics™ technology
hot-swap drives up to 4GB memory
integrated service processor

runs Windows® 2000, Windows NT,®
and Linux® starting at $4,426'
For financing, special offers, or to buy
direct, go to ibm.com/eserver/x330

Lawson Hones E-Business Application

BY MARC L. SONGINI

Lawson Software's latest enterprise resource planning application, announced last week, seeks to give customers a more integrated view of their business processes and their supply chain.

In addition, the Lawson.insight 8 Series product offers a number of new or enhanced industry-specific modules.

Other enterprise application vendors are talking about this sort of integrated collaborative commerce. However, St. Paul, Minn.-based Lawson stands out by offering applications to segments that would otherwise go unserved by larger vendors such as SAP AG and Oracle Corp., according to Tom Cook, a senior analyst at AMR Research Inc. in Boston. He said Lawson is particularly strong in the professional services, financial and health care areas, and in the public sector.

Lawson has been working to make all its individual software modules connect so users can get a thorough view of their business processes, said Cook. Having that function is where "end users have to be to play in the collaborative world," he said. "It's taken [Lawson] a few years to get it together."

The product will also allow users to tie their business-to-business exchanges into their back-office applications more directly. Users can now view supply-chain contracts from their desktops, giving them complete visibility into the procurement process and improving their efficiency, said Tony Marzulli, a vice president of marketing at Lawson.

The e-ScoreCard module in Lawson.insight is particularly interesting, according to Dennis Miller, CIO at Memorial Healthcare System. The Hollywood, Fla.-based health care provider has 6,000 employees and is already a Lawson shop. The module lets users view multiple documents simultaneously, which will let Memorial align and match its organizational resources to its strategic goals, he said.

Miller said he's also interested in exploring the product's ability to tie into marketplaces to trade with many partners simultaneously, instead of only one at a time.

Billing Calculations

Marzulli said Lawson.insight has been tweaked to cope with the needs of the growing services industry. For example, Lawson has added functions to the suite that will let professional services companies automatically calculate billing, he said. This will aid users in allocating costs and revenue appropriately, he said.

The product also includes an analysis tool that handles "human capital management," which measures and benchmarks things like workforce management.

The Lawson.insight 8 Series starts at about $50,000 and is slated to be generally available by Jan. 10.

Are you overwhelmed by your data storage needs?

CALL WORLDSTOR FOR SCALABLE, FULLY MANAGED DATA STORAGE ON DEMAND.

Whether you have acquired too much data storage capacity or installed too little, you're wasting money and IT staff time. Call WorldStor. Our Atlas™ Suite of services provides scalable, secure and highly available data storage management solutions that let you preserve capital and direct your team to more profitable pursuits.

With WorldStor, you get all the storage you need, but pay only for what you use. Then as your needs grow, so do we. Instantly. We provide the ease and flexibility to increase your storage capacity on demand.

So shelve those ideas of spending more on storage systems and software. Contact WorldStor instead, to learn more about the primary storage, backup, replication and professional services of the Atlas Suite.

www.worldstor.com

WORLDSTOR™
Storing the World's Information

©2000 WorldStor, Inc. 3975 Fair Ridge Drive, South Tower, Fairfax, VA 22033, Tel. 703 278 4000, Fax. 703 591 3637
WorldStor and Atlas are trademarks of Worldstor, Inc. All rights reserved. All other trademarks and registered trademarks are proprietary to their respective manufacturers.

"THE PERFECT DATA STORAGE SOLUTION FOR YOUR COMPA...

OH WAIT, YOUR NEEDS CHANGED AGAIN."

Given how quickly your business is changing, picking the right data storage solution has never been more important. Or more difficult. Imation takes the uncertainty out of that decision. Backed by nearly 50 years of industry experience and a team of certified data storage experts, we'll give you an unbiased, independent recommendation—a data storage strategy based on your needs. We've even built the industry's first independent SAN Solutions Lab to help you test and validate your solution—providing you with an independent look, before you lead your company's SAN migration. We'll do whatever it takes to maximize your current storage architecture and design the right solution for your evolving needs. No matter how often they change. To learn more, call 800-883-9891 or visit www.imation.com/solutions

STORAGE CONSULTING SERVICES

Storage Assessment Design | Storage Software Development | SAN Solutions Lab | Library Consulting

imation

imaginative solutions.

BRIEFS

Compaq Sued Over Digital Technology

Alleging that Compaq Computer Corp. manufactured PCs that use unlicensed, patent-protected MPEG-2 video compression standards, six electronics companies and Columbia University in New York have filed suit against Compaq. The suit claims that Compaq has refused to get licenses from patent holders to use the MPEG technology in its computers even though the computer maker has been told for the past three years that it needs to do so. Compaq spokesman Arch Currid would only say that his company is investigating the claims and will "vigorously defend the suit."

EarthLink, Time Ink Broadband Deal

Atlanta-based EarthLink Inc., the nation's second-largest Internet service provider, will become the first major provider to offer broadband Internet access over the cable systems of New York-based Time Warner Inc.'s cable division, the companies announced last week. Time Warner will extend its federal review period deadline with America Online Inc. by two weeks so the Federal Trade Commission can review the impact of the EarthLink agreement, according to Time Warner spokesman Scott Miller. The AOL/Time Warner merger is expected to be completed by year's end or shortly thereafter.

Philips Expands Medical Division

Dutch electronics giant Philips Electronics NV is beefing up its medical systems division with two acquisitions. Philips said it has agreed to buy Palo Alto, Calif.-based Agilent Technologies Inc.'s Healthcare Solutions Group for $1.7 billion; Agilent was spun off from Hewlett-Packard Co. last year. Philips also announced the acquisition of Milpitas, Calif.-based ADAC Laboratories Inc. for $426 million. Analysts said they weren't surprised. "Although two acquisitions may seem like a lot, the market has been expecting this," said Lucas Daalder, an analyst at brokerage firm Amstgald NV in Amsterdam.

Oracle Hit Again by Top-Level Resignation

Users, analysts split on potential effect of second executive departure in six months

BY DAN VERTON

Users of Oracle Corp.'s database software last week downplayed the resignation of Gary Bloom, an executive vice president in charge of Oracle's database development activities and other key functions at the company. But some analysts expressed concern about the thinning of Oracle's management ranks.

Oracle announced that Bloom, a 14-year veteran of the firm, will leave on Dec. 15 to become president and CEO of Veritas Software Corp., a maker of storage management software in Mountain View, Calif. Bloom's resignation follows the July departure of Ray Lane, Oracle's former president and chief operating officer.

"I have a career desire to be a CEO," Bloom said. "The way I look at it, Oracle is clearly under [CEO Larry Ellison's] leadership. He's more engaged than ever. That was a limiting factor, as far as career progression for me [at Oracle]."

Thinning Ranks

Doug Cummings, manager of new technologies at Oracle user Vicor Corp. in Andover, Mass., said he's not concerned about Bloom's departure.

"Their products are still quite good, just very expensive," Cummings said. "I do think that the exodus of several key executives is noteworthy, and as customers, we need to stay aware and watch the effect this has on Oracle. I'm just not ready to send up a flare yet."

Phil Russom, an analyst at Hurwitz Group Inc. in Framingham, Mass., said he has heard similar views from other users who "obsess over changes in Oracle's product pricing and packaging" but have no interest in Oracle's management changes. "I see [Bloom's] departure from Oracle as just another short-term glitch," Russom said.

But other analysts said they weren't so sure that the resignation of a second senior-level executive in less than six months wouldn't have a negative impact on the firm. Many had considered Bloom to be a potential heir to Ellison's post, particularly after Lane left Oracle.

"One of the patterns at Oracle is that the position of 'most likely to succeed' has been changeable over the years," said Carl Zetie, an analyst at Giga Information Group Inc. in Cambridge, Mass. "Either way, the executive ranks are starting to look thin, and retaining top talent will remain a challenge for Oracle."

What Lies Ahead

Mike Gilpin, another Giga analyst, said recent user complaints about exorbitant power-unit database pricing schemes and product quality could be "external symptoms" of an internal management upheaval.

"There are just fewer and fewer heavy hitters in Oracle's senior management who really have a solid background in running a big software company or some piece of one," Gilpin said.

Scott Nelson, vice president of the Oracle Development Tools User Group in Wilmington, N.C., said he's not as concerned about Bloom's departure as he is about the additional management departures it could trigger.

"Several Oracle people I've spoken to recently were concerned when Lane left and Ellison assumed more of the leadership responsibilities," said Nelson. "I don't see that alone Lane and Bloom leaving will be extremely detrimental, as they still have depth in upper management. But if another executive leaves, I don't think I'll be so optimistic."

ORACLE'S GARY BLOOM: "I have a career desire to be a CEO."

L&H Accounting Practices Under SEC Investigation

U.S., Europe suspend trading of L&H stock

BY LUCAS MEARIAN

The new chairman of Lernout & Hauspie Speech Products NV (L&H) has publicly addressed concerns over an investigation of the embattled company's accounting practices, saying the firm "will take any action necessary" to regain the trust of users, investors and government officials.

But Roel Pieper, who was named chairman of the speech recognition and translation technology vendor as part of a series of management changes earlier this month, didn't detail specific steps that the Ieper, Belgium-based company plans to take. He did say that an executive committee at L&H will investigate accounting irregularities discovered during an ongoing audit and then develop a new operating plan.

CHAIRMAN PIEPER vows to "take any action necessary" to restore faith in L&H.

"We're taking every necessary step to figure out what has happened," Pieper said during a conference call on Nov. 17. L&H officials "are not trying to rush into" any more restructuring actions, Pieper added. But the company expects to complete a promised restatement of its financial results in a matter of weeks, which Pieper hopes "will allow us to ... go back to normal operations as soon as possible," he said.

His comments followed the disclosure that L&H's auditor, a unit of Netherlands-based KPMG International, had withdrawn its reports on the vendor's financial results from 1998 and last year after deciding that it could no longer rely on the accounting procedures used by L&H. As part of its restatement, L&H plans to recalculate the numbers for those two years as well as for the first half of this year.

L&H's business and accounting practices are being investigated by the Securities and Exchange Commission because of questions that were raised about some of its reported sales to users in Asia. Trading of the firm's shares has been indefinitely suspended in both the U.S. and Europe.

In the announcement of its restatement plan, L&H acknowledged that "certain errors and irregularities" had been discovered during the internal audit that began in August.

Gauging the Fallout

When asked whether L&H will have to resort to widespread layoffs to restore its financial footing and win back the trust of outsiders, Pieper said the company "will take any action necessary to gain that objective." But executives at L&H "are not going to destroy the company and fire everyone," he added.

Pieper also addressed the issue of employee flight as a result of the investigations, saying that some workers have left and that several meetings of key employees have been held. But he said there hasn't been a mass exodus from the company, which has its U.S. headquarters in Burlington, Mass.

network maintenance can take up 27% of your time.

intel pro network adapters help take it back.

intel.

simplify LAN maintenance with intel® pro/100 network adapters. with singledriver technology, you can install and maintain your network connections using just one cd. one solution from top to bottom. from pcs to servers to notebooks the result. valuable time and money saved. this is just one of the many new ways intel adapters are solving problems you never thought adapters could solve make sure you specify intel adapters. because in the surge economy. lost minutes take months to make up for

intelligent way to connect ➜ *intel.com/go/singledriver*

MARK HALL

Managing Content

THE BUSINESS-TO-BUSINESS content management market will exceed $4 billion in less than five years, say the pundits at The Goldman Sachs Group and The Yankee Group. If their predictions are true, you'll be spending more money and time organizing information online — everything from engineering specs to pricing data — so that your supply-chain partners can access it and integrate it into their operations.

MARK HALL is Computerworld's West Coast editor. You can contact him at mark_hall@computerworld.com.

You can, of course, build your own content management application. Forrester Research estimates that nearly three-fourths of you do that already. After all, you've probably already created a fairly advanced electronic data interchange (EDI) application in-house, and that seems like a logical place to start. However, grafting onto EDI will put you at a competitive disadvantage as other companies shift to Web-based content management systems.

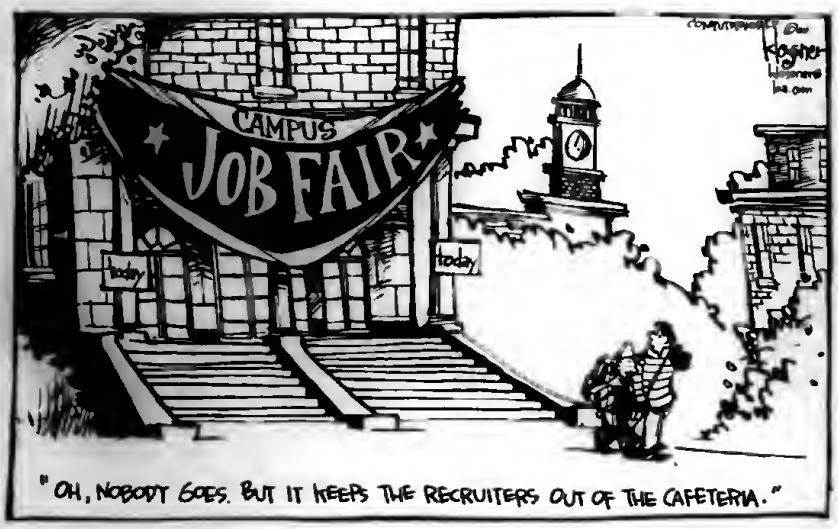
The problem is that most EDI programs would need significant recoding from developers, whose time is more precious than gold. Signing them up to change your EDI software so it can be made available to Web-based applications will be lengthy and costly. The conundrum: You need the structure that EDI offers plus the openness of the Web so your business-to-business supply chain can quickly embrace new and different vendors, customers and emerging technologies.

To get there, you're going to need a new application, one designed specifically for the Internet. Luckily, there are quite a few vendors to choose from — Liaison Technology Inc., Requisite Technology Inc., Saqqara Systems Inc. and others. Evaluating them carefully is vital. You must make certain that the application can handle structured information, whether it hails from enterprise resource planning sources or an Oracle database, as well as unstructured forms in everything from Word documents to PDF files.

Next, you must choose a package that lets domain experts in your company — not your IT staff — manage the process. They are the ones who understand the information's relevance, timeliness and sensitivity better than your best developer or manager ever will.

Finally, get other chief-level executives involved. CIOs who attempt to drive this on their own will encounter frustrating roadblocks if finance, marketing, engineering or procurement managers aren't onboard from the beginning. They need to understand that content management isn't a minor detail that can be delegated to a webmaster who's in between assignments.

Content management is only one more brick in your business-to-business virtual foundation. But it may turn out to be one of the most crucial that you lay.



"OH, NOBODY GOES. BUT IT KEEPS THE RECRUITERS OUT OF THE CAFETERIA."

DICK HUDSON

Is the CIO the CFO of the 21st Century?

THE CIO SHOULD emerge, in the first part of the new century, as an equal to the chief financial officer. This isn't wishful thinking.

Let's go back to the late 19th century. The Industrial Revolution is gathering steam (no pun intended). For the first time in history, businesses — not governments — are creating vast amounts of wealth. John D. Rockefeller Sr., the founder and chairman of Standard Oil, controls 60% of the world's oil production. Other industrial and financial barons control entire industries. Cottage industries with mom-and-pop bookkeeping give way to megasize accounting departments. Because no one person can manage such a financial empire *and* run the operations of the world's largest enterprises, a need for a schooled senior financial executive — the CFO — is born. CFOs quickly become the second most powerful executives in corporate business because they control the purse strings. Their influence is pervasive throughout the Industrial Age.

DICK HUDSON, formerly CIO at Global Marine Inc. in Houston, is president of Hudson & Associates in Katy, Texas. Contact him at rhudson@hmail.com.

Fast-forward to today. The Industrial Age is now relegated to secondary status with the explosion of the Information Age. As corporate America has become totally dependent on the flow of information, ideas and instant communication, the need to have a world-class senior executive at the top is as important today as it was 100 years ago. Just as the CFO in 1900 was responsible for the flow of capital — the lifeblood of the Industrial Age — so is the CIO today responsible for the flow of information, the lifeblood of the Information Age.

So should the CIO be on equal footing — at least in compensation — with the CFO? Absolutely.

I know from personal experience that this is an idea whose time has come. Following my recent departure after 18 years as CIO at Global Marine, I was approached by an executive recruiter about a position as CIO at a nationally recognized brand-name company that has operations around the world. I wasn't really interested, but I told him that if the compensation package was similar to the CFO's, and if I would have corporatewide policy-making authority for IT, I would consider the job. The recruiter hemmed and hawed and beat a hasty retreat. A week later, he phoned to say the company would agree to my terms if I was offered the job. But by then, I

had decided to decline the opportunity.

So, if you're an IT leader and you're approached by an executive recruiter, hold out for a CFO-type package. If the potential employer is a public corporation, its CFO's compensation package will be a matter of public record.

Go for it, and don't be surprised at the results.

DAVID MOSCHELLA

Making a Case For Selling Online Content

ONE OF THE longest-running debates on the Internet is whether selling content via the Web will eventually become a viable mainstream business. Thus far, the one-time utopian-sounding notion that "information wants to be free" has certainly gotten the better of the day. From Microsoft to the moguls of Hollywood, few firms have convinced either knowledge workers or consumers that their Web offerings are worth paying for.

Will this continue, and if so, what does it say about the sort of information that we will all have available? One way of looking at these questions is to examine the areas where Web users are currently paying real money for content.

As someone who works for a Web content start-up, I have observed five major classes of business-relevant Web content success. If you're thinking about selling content online, I would suggest that you begin by measuring yourself against the following criteria:

DAVID MOSCHELLA is vice president of knowledge strategy at Means-Business Inc, a Boston-based Internet start-up that's building a database of ideas. Contact him at [illegible]

■ **Accreditation.** Online universities, training companies and other electronic-learning enterprises can sell content online at least partially because their customers often get some form of certification or accreditation. Buying information from industry research firms often has a similar validation motivation. One can argue that in both cases, customers are buying credentials as much as they are content. Additionally, a high percentage of this type of spending is eventually paid for by corporations helping employees improve their skills.

■ **Very strong market power.** *The Wall Street Journal* and Harvard Business School can successfully charge for their Web content, primarily because they have very strong positions in their respective marketplaces. In each case, there's also a powerful brand prestige factor, not all that different from the accreditation benefits from online learning.

■ **Lack of available advertising.** The simplest reason many pornography sites have to charge money is that relatively few advertisers want to be associated with them. Conversely, the printed book, recorded music and recorded video industries have historically eschewed advertising, although this shows signs of changing on the Web.

■ **Specialized information.** Companies that offer highly specific databases covering topics such as legal information, copyrights, Web domains and credit information can develop a unique value proposition. In contrast, sites providing expert or advisory information regarding financial, health and other topics have, with a few exceptions, have found differentiation difficult.

■ **Archival information.** Oddly enough, *The New York Times* and others can charge for access to their archives, even though their more popular current information is available online for free. Perhaps the simplest explanation of this is that there's typically less direct competition in the supply of archived material, allowing a small per-usage charge.

If there is an overall pattern here, it's that the more competitive a sector is, the more difficult it is to sell content online. In contrast, the more unique one's position and the more one can tap into corporate or expense account spending, the higher the chances for success. Selling general information to consumers, no matter how good or what the subject is, has been an uphill struggle.

In the end, the future, like the past, will almost certainly consist of a highly nuanced mix of content supply and demand. We can always come up with reasons why we can watch the Olympics for free on television but must pay to see some possibly corrupt boxing match, but such realities are anything but intuitive. Predicting the various markets for Web content will require similar ingenuity and patience.

READERS' LETTERS

Kids' IT Role Models

AS A TECHNICAL woman, mother, and former school board member, I have to thank the Get Tech folks for their good intentions, but also advise them to revise their efforts ["Selling Teens on IT," Business, Nov. 13]. Using rappers and models to promote technical knowledge just reinforces kids' perceptions that being a rapper or model is what's desirable — after all, you get to be a spokesman for the things you can't do yourself.

Unfortunately, what motivates high schoolers is social popularity and money. Show them some 22-year-old Internet millionaires, some young inventors who've made a fortune, some geniuses who've helped save lives or change history. Show them that technical people are lively, glamorous and happy — not the bashful drudges that every teen-ager dreads becoming. And show them that becoming a Cisco millionaire is a lot easier to do than becoming the next Sisqo.

Also, start around third grade. Research shows that's when kids — particularly girls and African-American boys — start losing interest in math. By high school, it's kind of late to re-engage them. But do keep trying.

Susan Jancourtz
Calabasas, Calif.

Antispam Story Spun Into Buzzwords

THE STORY "EarthLink Antispam Measure Trips Some Users" [*Computerworld.com*, Oct. 26] started out making sense, but by the end it had degenerated into a weird mishmash of buzzwords and FUD terminology with no useful meaning.

"When configuring a firewall, blocking inbound communications on ports 25 and 80 is considered good practice."

This is similar to saying, "When driving a car, turning the steering wheel to the left is considered good practice." Sure, it's good practice if and when you want the car to move to the left. But as a blanket statement, it's silly. Blocking ports 25 and 80 isn't a good practice if you want mail or Web servers on the inside to interact with the outside world. The exception is when public servers are in a DMZ environment, but in those cases the firewall should categorically block all inbound connections.

"A spammer could use Port 25 to send one e-mail with thousands of addresses to an Internet service provider's e-mail server, thereby using the provider's computer power to do its spamming."

None of the ISPs mentioned in this article are blocking Port 25 on their own mail servers. If they did, then neither their customers nor staff would receive another piece of e-mail again. What they are doing is blocking Port 25 on their customers' machines. This prevents spammers from using misconfigured customer machines to relay spam.

Miguel Cruz
Vice president of technology
Firmseek.com
Washington

Report Was Distorted

JULEKHA Dash's article "Study: H-1B Crucial to Economic Growth" [Page One, Oct. 30] grossly distorts the recent report by the National Research Council on the information economy and its workforce.

The preface of the NRC report clearly states that "it is not — and never has been — a report only or even primarily about H-1B visas." Contrary to what Dash suggests, the report didn't support the industry's views on the use of foreign workers, and it certainly didn't endorse employer arguments for expansion of the H-1B program. The authors summarize both the employer perspective as well as the more critical view of IT workers and say they lacked "an analytical basis on which to determine the optimal number of H-1B visas." Without such a basis, the report concludes, "decisions to reduce or increase the cap on the H-1B visas are fundamentally political and . . . depend primarily on political balances of power." Contrary to providing an endorsement of the industry's demand for foreign workers, the NRC report cautioned that "the use of foreign workers may have deleterious effects on the wages and job security of U.S. workers."

Jack Golodner
President
Department for Professional Employees, AFL-CIO
Washington

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

www.legato.com

BETTER BACKUP, KILLER FEATURES.
IT'S GOTTA BE LEGATO.

Introducing Legato NetWorker 6.0 Legato's proven data protection technology is used within 90% of the Global 1000. So people expect Legato NetWorker 6.0 to raise the bar even higher with new features like extended NAS and SAN support, enhanced scalability, performance and availability, and simplified data management. If you demand the best solution for protecting business-critical data within your enterprise, you want NetWorker 6.0. Take a closer look — go to legato.com/ad/?networker or call 1-866-LEGATO6.

LEGATO

DAN GILLMOR

Election Debacle Offers Valuable Lesson for IT

THIS YEAR'S PRESIDENTIAL vote is an utter mess that demonstrates, once again, the need for everyone — governments and companies — to consult users before coming up with products or services.

I'm not referring to the generally low quality of the candidates. Rather, this is about the consequences of the awful "voting user interface" — known in this case as the Palm Beach County, Fla., "butterfly" ballot — that helped throw America into an uproar beginning on Election Night.

DAN GILLMOR is a technology columnist at the *San Jose Mercury News*. Contact him at dgillmor@sjmercury.com.

Consumer-products companies often test their prototypes on regular folks to see how designs affect functionality from the buyer's standpoint.

Electronics and technology companies do this kind of testing, too. But if the difficulty of using many technology products is any indication, they don't do enough of it.

I'm reasonably bright, but I've been stymied plenty of times by products that defied my best attempts to work with them. Consider, too, the legions of VCRs that are still blinking 12:00.

The people who design products know how to use them, so they often figure other people must grasp the essentials as well.

That's not necessarily so.

'Dumb Mistakes' Can Be Common

"It is sobering to observe a test where a user repeatedly asks, 'How do I go to the next step?' and you want to scream 'Click the Next button!' that they just somehow can't see," observes Dan Bricklin, a renowned software engineer, on his Web site (*www.bricklin.com/log/ballotusability.htm*). Bricklin co-wrote VisiCalc, the first electronic spreadsheet, and is founder and chief technology officer of Trellix Corp., a Web-design tools company in Concord, Mass.

"We know from lots of examples of usability studies that errors on tasks arising from 'dumb mistakes' are very common, with rates of easily 5%, 10% or more," Bricklin writes. "Elections, even important ones like for president of the United States, are often decided by much slimmer margins than that.

"In our ever-mobile world, thorough testing of ballot techniques and standardization may be called for if we are to believe that we truly choose our elected officials rather than flip a coin," he writes.

What are the lessons here for IT organizations? Check your work with the people who will ultimately have to rely on it.

That means bringing users into the process at the start. Ask them what they need, then create it within the constraints of what the organization needs. Then, when it's done, test it on the people who will use it.

Some critics have attacked the voters in Palm Beach County who mistakenly voted for Pat Buchanan rather than Al Gore or punched two holes on the confusing ballot. Maybe these voters should have asked for new ballots at the time if they were confused, as was their right.

But people don't like to feel as if they're stupid. And they don't like to admit they've just screwed up. If IT organizations believe end users are admitting all their dumb mistakes inside enterprises, they're kidding themselves.

For enterprises, the cost of lousy user-interface design isn't as high as a constitutional crisis. But if efficiency and user satisfaction matter, it's high enough to care about. ▶

MICHAEL GARTENBERG

Competition May Be Closing In on Palm

HERE'S ONE OF my favorite Silicon Valley tales. See if you can guess the players.

It begins with a group that designs a most impressive operating system, far more elegant than anything else the world has seen. The initial device it ships on is monochrome and has an anemic 128KB of RAM, and it is dismissed by many as a toy. Eventually, with some new hardware designs, increased memory and color support, the machine is a success.

MICHAEL GARTENBERG, former vice president and research area director at Gartner Group Inc., is a partner at Hudson Venture Partners LLP, a venture capital firm in New York. Contact him at mgartenberg@hudsonpt.com.

Yet the core product starts to languish. Instead of improving the technology, the company focuses on meaningless differentiation, such as case colors. In an attempt to boost revenue, it licenses the crown jewels to other hardware vendors, which begin to take away market share. The company is flying high, enjoying seductive gross margins and completely ignoring the fact that the original platform visionaries have left to build a competing product. Meanwhile, a few hundred miles up the coast in Redmond, Wash., Microsoft, after two failed efforts, has released the third version of an operating system designed to compete with this product. And, as with many of its previous products, Microsoft finally got it right the third time.

Many of you might think that this is the story of Apple. But actually, it's Palm. Today's Palm bears a striking resemblance to Apple in the mid-1990s, and not merely because many senior Palm execs are Apple alumni.

Thriving Elsewhere

While Palm seems to have lost its ability to innovate, both Handspring (founded by Palm founders Donna Dubrinsky, Jeff Hawkins and Ed Colligan) and Microsoft have released new and innovative products. Palm has yet to update an increasingly aging product in the guise of Palm OS, and it's rapidly losing market share to Handspring's Visor and Microsoft's Pocket PC devices.

Handspring's major innovation is the Springboard expansion slot, which offers the ability to turn a Visor into a digital camera, an MP3 player and even a GSM-based cell phone. In addition, it offers the only 16-bit color version of a Palm OS-based device to date.

The Pocket PC platform offers extended functionality in a handheld. In addition to serving as a basic personal information manager, the Pocket PC offers scaled-down versions of Word and Excel to view documents on the road, a full-featured e-mail client, Pocket Internet Explorer, an e-book reader and even an MP3 player.

For business users, this has practical ramifications. Because of Handspring's extended hardware efforts and the popularity of the Palm V's sleek and thin design, the Palm OS will likely find itself driven forward, and Palm-based devices won't be obsolete anytime soon, making them a safe IT purchase.

Users who require basic organizer functionality will, in fact, be best served by the Palm OS, but they probably should consider a Handspring device with Springboard expansion.

Users who require or desire additional functionality will find a better device in the Pocket PC, which has built-in support for e-mail, Internet Explorer, Word and Excel.

Ironically, while Microsoft's detractors point to the Pocket PC's complexity, those are precisely the types of extras many Palm users try to add to their systems.

None of this bodes well for Palm.

Over the past year, it has lost considerable market share to Handspring and Microsoft. Handspring, in particular, is on track to take nearly one-third of the market directly from Palm by the end of the year. In addition, a promised Palm shift to a new ARM microprocessor architecture from Intel will likely take years and create software compatibility problems, giving Microsoft and Handspring more opportunity to take away even more market share.

The bottom line is that unless Palm can start delivering some real innovation soon, the writing will be on the wall. ▶

SO WHAT YOU'RE TELLING ME IS THAT ONE OF YOU INSTALLED SOMETHING THAT FOR SOME UNKNOWN REASON PREVENTS CUSTOMERS AND SUPPLIERS FROM DOING BUSINESS WITH US?
AND YOU'RE ALL CLUELESS?
I'm GEORGE THE INTERNET CONSULTANT
HE'S LOSING IT!
WHATEVER

ride the light

Qwest.

Here's a radical idea. An IT solution built to work seamlessly instead of one made from a bunch of parts that never will.

Why integration should mean integration

What you do is hard. Some might even say painful. After all, having to rely on a bunch of so called "best of breed" vendors for IT solutions invariably means you'll end up with a bunch of lame excuses and no small amount of finger pointing. At Qwest, our approach helps us deliver what others merely promise True integration and total accountability.

How true integration works.

Our approach starts with the Qwest global IP network It runs over the world's most advanced OC192 fiber-optic, broadband backbone Integrated into our network architecture are our CyberCenters.™ From these we host our clients' core business applications, including their Web sites And as one of the nation's largest ASPs, we have the certified software engineers who will optimize your applications to benefit from the speed and reliability of the network.

You're never alone.

Another key part of Qwest's approach to integration is the continuing guidance we provide through our professional services/consulting division Some of the smartest tech-savvy people around, who know how to make things work in the real world It means you'll get the benefits of our advanced technology along with the peace of mind that comes from dealing with people capable of making the seemingly impossible, possible

One relationship means total accountability.

Finally, beyond the practical benefits of Qwest true integration, you'll also gain from the efficiencies of dealing with a single company One that's responsible for everything from solution design, to implementation, to service, to billing. One that's also happy to put what you expect and what it will deliver in writing We call it the Qwest Service Level Agreement (SLA), and it's our promise there will be no more finger pointing, no more wrangling about problems, and no more questions about who's responsible for fixing them We are.

For more on Qwest's unique approach to integration, visit us at **qwest.com** or call **1 800 RIDE QWEST** Then you can get on with running your business

broadband • internet • hosting • applications • consulting telecommunications • wireless

Breakthrough technology enables B2B sooner, for dramatically lower costs. Now you can design a B2B solution in as little as three days, have your prototype operational in three weeks, conduct more than a million transactions per day, and enjoy savings month after month. Those are actual results reported by Attunity customers. Our revolutionary B2B integration software lets you create, share, automate and manage your business processes with customers and suppliers of any size, anywhere—while fully integrating your existing IT systems—and linking you with leading eMarketplaces. Register on our web site to learn how we're easing the way to B2B with companies like Compaq, Future Electronics, Verizon and Nu Horizons. Or call us today at (877) 888-8763.

ATTUNITY
This way to B2B

www.attunity.com/go/u1/

© Attunity Ltd. NASDAQ:ATTU

BUSINESS

AD ACCESS

Wireless vendors claim that Americans are eager to see ads and other "push" information on their wireless devices, as long as they get discounts or other incentives. But some analysts say users will resent seeing ads when they must pay for the airtime. ▸ 52

WOMEN IN IT

Women have come a long way in technology, but not as far as they should have, says the founder of Women In Technology, which runs a series of listservs that act as a combination job-networking tool and professional self-help group. ▸ 54

GETTING TO KNOW YOU

J.C. Penney is working on a system that pieces together all the information it has on specific customers to help the company cross-sell online, in-store and through catalogs. The retailer might not have started the project if it knew how hard it would be. But if it works, it could quadruple the amount of money individual customers spend. ▸ 56

GLOBETROTTING

U.S. IT workers who want to travel overseas have a huge opportunity. The skills crunch that's hurting U.S. firms is even worse in some other countries. But succeeding as a globetrotting American consultant means demonstrating flexibility, adaptability and the ability to learn a new business dialect, even when you're still speaking English. ▸ 58

Bill Sanders, CIO, Honeywell

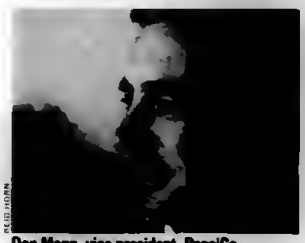
40 DUE DILIGENCE

Even though the consolidation of IT operations can generate a big chunk of the cost savings targeted in mergers and acquisitions, IT leaders rarely have a seat at the planning table. Some who have been there offer words of advice on what to do before conducting due diligence.

Peter Campbell, CIO, XO Communications

42 FINDING THE TIME BOMBS

A thorough knowledge of their own company's operations and an informed look at the other company's IT budget are two of the factors that will help IT managers spot time bombs that could go off after a merger or acquisition deal is closed. Some pros advise how to locate trouble spots, even when there's not much time to look.



Don Mann, vice president, PepsiCo Business Solutions Group

46 COMPENSATION CULTURE CLASH

One of the toughest challenges facing the IT manager with any merger or acquisition is the successful blending of different compensation cultures. If not handled skillfully, the compensation issue can quickly drive away IT staffers from both companies.

SPECIAL REPORT

50 WHEN START-UPS MERGE

Jim Champy says technology-based start-ups will increasingly eye one another for mergers or acquisitions. This could spell good news for established companies.

MERGERS & ACQUISITIONS

Why IT needs to be involved before a merger. By Kathleen Melymuka

LAST YEAR, CITIGROUP INC. ABORTED a potential bank acquisition when its IT team deemed the target bank's technology too shaky.

Honeywell International Inc. was about to acquire a $2 billion security products business when the go/no-go decision came down to the IT department.

"If we had said there were big problems, that would have killed it," recalls Bill Sanders, vice president and CIO at Morristown, N.J.-based Honeywell.

"If a merger is going to depend on the integration of companies and operations, it's essential that the CIO and key tech people are involved in due diligence," says Mel Taub, senior executive vice president and CIO at Salomon Smith Barney Holdings Inc., a division of Citigroup in New York. "Otherwise, you don't know what kind of problems you'll uncover after the deal is struck."

MERGERS ACQUISITIONS

But surprisingly few CIOs wield much power during mergers and acquisitions (M&A). In fact, most aren't even involved in M&A due diligence, even though systems integration is often a major source of synergy and savings.

Companies may be paying a steep price for excluding IT. A recent series of reports from The Conference Board Inc. in New York determined that as many as 70% of M&As fail to deliver their expected value, both in terms of improving shareholder value and meeting anticipated cost savings targets.

But what is an IT organization's ideal role before a potential M&A? We asked a handful of CIOs and others who live and breathe in the M&A atmosphere what IT due diligence really looks like.

GETTING A JUMP ON M&A

Jim Kinney, former CIO at Kraft Foods Inc. in Northfield, Ill., and now president of Mariner Consulting Inc. in Barrington, Ill., says IT due diligence starts even before a company has been targeted for a takeover. "It pays for the CIO to know as much as he or she can about competitors' IT organizations," Kinney says.

For example, has the company created a shared service center for transaction processing? Has it consolidated data centers worldwide? Does it have a distributed IT architecture or a centralized processing shop? Has it outsourced infrastructure? Applications? Who did it outsource to, and what length of term is that contract? What does it spend on IT?

"All of that information, including some estimate of their total spending, is important for a starting point in any later acquisition discussion," Kinney says.

Once a firm has been targeted, there are two key questions that need to be asked, he says:

- Assuming that all duplicate infrastructure activities will be consolidated, what kind of savings can be expected? Kraft's experience in consolidating data centers internally enables its IT organization to make a good estimate.

Kinney says that's important because productivity savings achieved by the merger are critical to achieving a return on the investment you're making. When Kraft and General Foods Corp. merged in 1989, Kraft expected more than $500 million in productivity savings, and that had a positive impact on Wall Street's evaluation of the company and its stock price.

- What strength or capability does the target company have that might provide value to the acquirer? For example, a retailer might have a very strong store delivery system, complete with mobile computers in the delivery trucks, and the acquirer may need that capability. Without IT, the M&A team may not understand the implications for your company.

A CIO can't include too many people on the due diligence team, so he can't always get down to the level of detail he'd like, Taub says. But he can look at infrastructure and platform differences such as hardware and software platforms, operating systems, network architecture, network protocols, software lan-

DUED

guages and the maintainability of major applications.

Taub also looks at how widely dispersed the offices or data centers are, which activities both companies handle in-house and which they subcontract, which facilities are inside and which are outside, and how well-aligned the two companies are in terms of using consultants vs. in-house staff.

THE PIPELINE

At Honeywell, Jack Arnold, vice presideot for common and companywide systems, represents the IT group on a standing M&A team. Sanders says he considers Arnold his chief operating officer.

The M&A team holds periodic "pipeline reviews," in which it considers any potential acquisitioo or divestiture from the time it's a glimmer in someone's eye, "so Jack and IT have an early warning of everything oo the horizon," Sanders says.

Before an acquisition, the M&A team at Honeywell looks at a handful of high-level IT issues:

- Does the acquisition candidate have a documented IT strategy that's aligned with the business? "That gives you a sense of whether it's a good or weak IT organization," Sanders says.
- To what extent does it have a set of infrastructure standards, and how much is that followed? That will indicate whether the infrastructure is fragmented or integrated.
- How's its application portfolio? Does it develop its own systems or buy packages? If it buys, is there a set of standards, or can people implement their own?
- What's the state of the company's networks and messaging application?

After that, the IT unit drills down to a formal, documented and proprietary M&A process, with roles, responsibilities and questions all laid out. The result is a set of recommendations and a plan detailing what the IT department would do in the first 100 days after the acquisition. That assures that "when the deal is signed, it's 'go,' " says Arnold.

THE COOKBOOK

"In bank mergers, about 75% of the benefits are typically driven by technology," says Joe Smialowski, vice chairman of technology and operations at FleetBoston Financial Corp. in Boston. "Technology is really a linchpin to the overall success of the transition, so it requires that [senior IT management is] involved at the very front."

> If a merger is going to depend on the integration of companies and operations, it's essential that the CIO and key tech people are involved.
>
> MEL TAUB, SENIOR EXECUTIVE VICE PRESIDENT AND CIO, SALOMON SMITH BARNEY HOLDINGS

Fleet has grown to become the ninth-largest bank in the U.S., largely as a result of an aggressive acquisitioo strategy. "We hring a cookbook to it," Smialowski says.

At Fleet, the Enterprise Project Office is Smialowski's M&A SWAT team. It's been involved in M&A activities for more than a decade and begins by asking several strategic questions:

- Is the transaction feasible from an IT perspective?
- What impact might this have on customers? Ideally, any merger activity should be transparent to customers.
- How does it position Fleet for future acquisitions? "We're always looking at things as steppingstones," Smialowski says. "Will this acquisition assist us in the future, or do we need to he coocerned about some part of it?"

Theo it drills down to more specific issues:

- How will the firms actually merge, step-by-step?
- What's the timetable? "This has so much to do with the economics of the deal," Smialowski says. The faster the two entities can he merged, the greater the benefits that can he derived.
- What are the cost-saving opportunities?
- What are the one-time conversion costs?
- How will the volume of transactions impact areas of the husiness such as check processing, servicing of automatic teller machines and loan portfolios?

"These all become critical inputs in arriving at a final purchase price," Smialowski says, "and technology is the enabler of the timetable and the approach, so a lot hinges around the technology group's ability to deliver."

DEVELOPING A TEMPLATE

Cardinal Health Inc. in Columhus, Ohio, has grown from a $5 hillion company seven years ago to a $30 hillion company today, primarily through acquisitions. Executive Vice President and CIO Kathy Brittain White has been developing a standard approach like those used at Honeywell and Fleet. "There are new things we learn every time, so we're trying to formulate a process that makes us better," White says.

Cardinal's template is proprietary, hut White says general questions you can ask include the following:

- What operating systems do the applications run on?
- What agreements or contracts are in place with vendors and outsourcers? And will they continue to he honored after the acquisition?
- How compatible are the two sets of systems, even down to e-mail and desktops?
- How much depreciation on hardware and software has been claimed?
- Will the acquired company run independently, or will its environment he merged? What security and backup issues does that raise?

Regardless of the CIO's approach to due diligence, it won't matter if he isn't invited to the pre-M&A discussions. Successful CIOs say getting that invitation depends on whether the CIO is considered a business insider. If you're not normally at the table for key business issues, you'll miss this discussion as well, Sanders says.

"I think that's true," says Kinney. "If the CIO is actively engaged with senior management, then it becomes a very natural reaction to include the CIO in those kinds of discussions. If it's a distant relationship, it just doesn't occur to them."

In other words, if your business "gets" IT, you're in; if it doesn't, you're out.

"The world is divided hetween people that get it and people that don't," says White.

LIGENCE

FINDING THE TIME BOMBS

Knowing your own IT operation is the key to sizing up the other company's. By Gary H. Anthes

A MIDSIZE MIDWESTERN BANK learned a painful lesson last year when it acquired a savings and loan (S&L). During the premerger due-diligence phase, the bank was given an IT head count by the S&L. The head count hinted at a time bomb that would later destroy the financial projections on which the deal was based.

"We got initial staffing numbers, and it looked like a very small IT organization," recalls Julie Giera, a vice president at Cambridge, Mass.-based Giga Information Group Inc. who observed the acquisition but declines to give the real names of the banks involved. Nevertheless, the bank made assumptions about the types of people in the S&L's IT shop. "Unfortunately, after the deal was done, it turned out that all the technical expertise — software development, maintenance programming, all of it— was delivered by a consulting firm. What was left [inside the S&L] were project managers.

MERGERS ACQUISITIONS

"The bank was held hostage," Giera says. The consultants' rates zoomed from $65 to $150 per hour, causing the bank to overshoot its consulting budget by 560%. Worse, the time needed to merge IT and other operations increased by 50%, from 12 to 18 months.

Sizing up another company's IT systems before signing a merger or acquisition deal is difficult because time for such due diligence is usually short, and the parties are fearful of giving up confidential information in case the deal falls through. Nevertheless, there are ways to spot time bombs and to see if all those IT cost savings the CEO is promising are really attainable.

Peter Campbell, CIO at XO Communications Inc. in Reston, Va., is a veteran of mergers and acquisitions in the telecommunications industry. Given

Finding the Time Bombs, page 44

KATHERINE LAMBERT

Peter Campbell, CIO at XO Communications, says analysts can spotlight areas that may cause problems after a merger.

ANNOUNCING SOLUTIONS FOR THE *NEW*, NEW ECONOMY.

(YOU KNOW, THE PROFITABLE ONE.)

The promise of e-business is every bit as robust today as it was when the "new economy" was declared. It's just that things that were labeled passe, like planning, infrastructure and profitability, have returned with a vengeance. Welcome to the new "new economy." No company is better suited for this new world of value-oriented e-business than SAP, with our supply chain, collaboration and customer relationship solutions. Out with the "new." In with the "new new." Learn more, type in www.sap.com

THE BEST-RUN E-BUSINESSES RUN mySAP.com

SAP™

FINDING THE TIME BOMBS

Continued from page 42

some metrics about one's own IT, it's possible to get some quick insights from the other company's financial data, he says.

Campbell splits IT into two big groups: applications and operations. Applications are divided further into categories such as billing, customer care and budgeting, while operations are broken into groups such as mainframes, midrange, end-user computing and networking. Costs in the various categories are then related to overall business metrics such as number of employees or revenue.

"For example, I see that for every dollar of revenue, we spend 5 cents on mainframe operations, but they spend 10 cents," Campbell says. "With that kind of benchmarking as a starting point, you have a basis for discussion. Why do you cost 10 cents and I only cost 5 cents?"

That kind of analysis can spotlight areas that may cause problems after the merger or acquisition deal is signed. And it helps home in on areas where cost savings are most readily obtainable. For example, Campbell says, his company may have one desktop support person for every 120 employees, while the acquisition target serves just 80 employees with each support person. Campbell says he might then project a 33% savings in support costs at the target company by moving it to his model of centralized support and automated software upgrades.

But Campbell cautions against comparing the cost of apples to the cost of oranges. For example, if one company leases PCs and the other buys them, or if one company assigns them to IT and the other to end-user departments, it may be difficult to compare their costs meaningfully. "You may end up finding some interesting accounting issues," he notes.

The analysis and benchmarking that Campbell recommends may well spotlight your own weaknesses, he adds. "What you have to guard against is the arrogance of the acquirer," he says. "You are after best practices, and you should see efficiency gains in both companies."

KNOW THYSELF

Indeed, any evaluation of another company's IT systems should begin with a self-assessment by the acquiring company, says Joel Goldhammer, a vice president at A.T. Kearney Inc. in Chicago. "What's the state of my architecture? How's my network? What ERP systems do I have? Where am I getting most customer complaints?"

The strengths and weaknesses so identified can then be weighed against those of the other company. For example, Goldhammer says, "if I feel that my biggest problem is getting my call centers to work well and they have outstanding call centers, that's a synergy I can get really excited about."

Goldhammer adds that detailed "best-of-breed" comparisons of every application at each company are a waste of time. "It's at too low a level of detail. You need a plausible answer that's quickly implementable with high reliability. The cost of the last 5% isn't worth it," he says.

Michael G. Parks, CIO at NorthPoint Communications Group Inc. in San Francisco, was an IT executive at Wells Fargo & Co. in 1998 when it merged with Norwest Corp. Parks says Norwest hadn't bothered much with IT due diligence when it acquired smaller financial institutions.

"Norwest used a cookie-cutter approach," he says. "They really couldn't care less about the systems they were acquiring, because they are just going to walk in and impose their own systems in a very routine way." Norwest's due-diligence checklist focused on business and customer issues, not on IT, Parks says.

But that approach may not make sense when merging with a large, complex organization, Parks says. "You can't migrate those customers down a cookie-cutter path, because you have so many specialized products and a lot of automation to back them up," he says. In the Wells Fargo/Norwest "merger of equals," for example, the parties combined their respective applications very slowly, one by one, with a keen eye on customer impacts, he says.

Indeed, "where companies trip up is they make a decision that's completely logical, except that they forget the customer. At every decision point, you have to test it: If I do this, what will my customers see? What will they feel? Can I explain it to them? How do they adapt and cope?" Parks says.

Jonathan Poe, a vice president at Meta Group Inc. in Stamford, Conn., says evaluating another company's IT systems must be framed by an understanding of why the company is being acquired. Is it to acquire market share? An expanded product line? Access to key customers? State-of-the-art operating facilities? Brand reputation? An e-commerce capability?

The answers to those questions will tell you how to judge the merits of the acquisition's IT assets, Poe says. "When I'm going in to look at a company, I'm looking to see what unique things there are, as opposed to 'How do you do accounting?' " he says. "I have to understand what my basic infrastructure model is and where I'm adding value and where I'm not."

THE PRICE IS RIGHT - MAYBE

Investment bankers who put together merger and acquisition deals often project IT savings far in advance, based on experience with similar deals. Then some hapless CIO is expected to make it happen, no matter what. Analysts say the CIO should try to validate those estimates as early as possible.

"That's one of the toughest things a CIO has to do, but you should be able to master it," Poe says.

The CIO should look at a merger just like he would any other major IT project, he adds. Therefore, the CIO should already have established methodologies — supported by project-management, cost-estimation and portfolio-analysis tools — used to plan and budget projects and for make-vs.-buy decisions, Poe says.

"I should already have a fast assessment capability to show my business partners and [Wall] Street that we are making progress," Poe says.

P.P. Darukhanavala, chief technology officer at BP Amoco PLC in Chicago, says companies can generally expect to save from 15% to 40% of their combined IT budgets when they merge. When processes and geographic areas overlap to a significant degree, savings will be near the high end of the range, he says.

Darukhanavala, who led IT integration when British Petroleum and Amoco Corp. merged, says a decentralized IT organization is a red flag.

"If things are centralized, it's much easier to rationalize and combine processes, but if IT is dispersed all over the place, just collecting everything together is much, much harder," he says.

Indeed, even veterans of mergers and acquistions say combing IT systems always has pitfalls.

"At the end of the day, you will have made a lot of good decisions and a few bonehead decisions. You'll have to go fix them," says Parks. ◗

> You are after best practices, and you should see efficiency gains in both companies.
>
> PETER CAMPBELL, CIO, XO COMMUNICATIONS

Risky Business

"What you want to do in the initial stages of due diligence for a merger is assess risk," says Julie Giera, a vice president at Giga Information Group. Giera says the following are among the areas to look at:

- **Hardware, software and IT services vendors:** Look at viability, flexibility, financial position, market share and service qualifications of major suppliers.
- **Disaster recovery:** Look at procedures, audit findings, suppliers and contracts.
- **Security:** Look for fraud by insiders when a merger or acquisition is announced. Pay special attention to the security surrounding contract management, procurement, accounts payable and accounts receivable systems.
- **Mean time between failures for critical systems:** Look at frequency of maintenance requests and the frequency and duration of downtime.
- **Capacity:** Look at capacity/scalability and percentage utilization of hardware and systems.
- **Hardware and software maintenance:** Look at service contracts for critical systems and components. Leave contracts in force for at least six months.
- **Change management and approval:** Look for tight controls on system changes during the turbulent merger and conversion period.
- **Out-of-date systems:** Look for systems that aren't compliant with Y2k, the Euro currency or government regulations. Systems that are more than seven years old should get detailed scrutiny for "land mines."
- **Personnel issues:** Look at attrition rates. Is key labor coming from inside or from consultants? Who maintains the legacy applications?
- **Outsourcing and lease contracts:** Look for clauses that specify huge termination penalties.
- **Project plans/budgets, help desk reports, audit reports, service-level reports:** Look for poor performance and chronic trouble spots.

– Gary H. Anthes

M BRING YO DOWN E A MIAM DA E MM

MM T BE A MA AM

sagavista
Enabling the E-economy™
through Enterprise Integration

REAL
Awards
SAG

COMPENSATION CULTURE CLASH

MERGERS ACQUISITIONS

"WHAT DOES THIS MEAN TO ME?"

That was Don Mann's first thought on learning that PepsiCo Inc. in Purchase, N.Y., would consolidate the IT staffs of subsidiaries Pepsi-Cola Co., Frito-Lay Inc. and Tropicana Products Inc. into a shared-services organization spanning the entire company.

Mann, who had been a longtime consultant at PepsiCo before joining Frito-Lay, knew that the rest of his staff and colleagues were asking the same question.

After merging in 1965, Pepsi-Cola and Frito-Lay had operated separate IT systems and organizations for more than 30 years. But with the acquisition of Tropicana in 1998, then-CIO Steve Shuckenbrock decided to streamline IT by creating the PepsiCo Business Solutions Group (PBSG).

Sticky personal questions quickly arose. Launching PBSG involved more than technical and operations issues. It also called for the complete restructuring of salary structures, job categories and titles, lines of reporting and career paths. Every IT employee in all of the companies would be affected.

"We faced serious change-management issues," says Mann, who is now vice president of application development at PBSG. "It's not easy to restructure job codes and classifications for employees who've grown up in one company, who are comfortable there, who understand the culture and their career paths."

But these issues about the personal impact of merger-and-acquisition activities must be dealt with alongside salary and benefit issues for IT employees, say benefits consultants, human resources specialists and managers in postmerger IT departments.

Mishandle or ignore such apprehensions, and the manager can expect IT employees to jump ship in droves, regardless of compensation packages, consultants and specialists warn.

PepsiCo became well aware of the value of the approximately 1,000 IT employees who would be part of PBSG, says Shan Burchenal, director of compensation at PepsiCo and the designer of the new compensation structure for PBSG. She and other human resources specialists interviewed IT senior managers to understand their issues and priorities. PepsiCo also contracted with New York-based consulting firm William M. Mercer Inc. for data about what salaries the market was paying for various IT positions.

"We were starting with a white sheet," says Burchenal. "We wanted to be at the forefront of what was being done for IT." In particular, that meant finding ways to get pay beyond base salary to top IT performers.

PepsiCo couldn't match other companies' promises of issuing stock options before their initial public offerings (IPO). But it did institute competitive salaries, extend its performance bonus program down to junior IT employees and institute "hot-skills pay." Employees with skills in extremely high demand, such as Java, SAP and database programming languages, are eligible to receive hot-skills pay worth about 10% of their base salaries, with installments paid quarterly.

"You can pretty much do what you want to reward performance," says Burchenal. However, be prepared to take some flack from other departments about IT-specific compensation structures, she says.

"We had to educate our counterparts in sister divisions about IT's unique needs," says Leslie Wilemon, human resources director at PBSG. That was especially true of the bonus program, which at PepsiCo companies had long been a management-only perk.

THE NAME GAME

Unlike PepsiCo, most companies don't approach merged IT departments with a clean slate. Instead, they try to shoehorn the new acquisition into an existing structure, which often leads to poorly integrated IT departments. The result is that workers don't fulfill their hoped-for potential, says David Van De Voort, principal consultant at Mercer's IT Workforce Effectiveness Group in Chicago.

For example, job titles and categories, which often define IT career tracks and salary levels, can't be thought of as minor details. Agency.com Ltd., an interactive services firm in New York, acquired eight other properties within about two years, building an IT staff of some 55 people, with 40 in regional and international offices.

"There were vast differences in the titles people gave to the different skills," says CIO Danny Gumport. Agency.com's IT managers approached the problem first by looking at job descriptions and agreeing on IT disciplines, then working to define common job titles across the offices.

"It's tough to know if you have the talent you need when all the titles are different," Gumport adds.

Synchronizing job titles also helps Agency.com offer equitable pay across job titles, whether the job is in Copenhagen or New York. However, Gumport says, there are regional differences in the firm's IT salaries, reflecting the hiring competition and cost of living in different cities and countries.

THE OPTIONS ISSUE

At some firms, IT employees hope to earn a lot more by cashing in stock options after an IPO. That was true at College411.com and CollegeClub.com Inc., but both companies were acquired by Student Advantage Inc. before they could launch IPOs. That meant IT employees had to be educated about the differences between preliminary options and options in an already-public company.

Some employees had to be reminded that options aren't stock and don't have monetary value, says Debra Gibb, CIO and senior vice president at San Diego-based CollegeClub.com, now a division of Boston-based Student Advantage. That was hard to hear for some veterans with fully vested options.

"But many people were tired of the promises that 'Yeah, yeah, we're going public,'" says Gibb. These people were relieved to work for a stable public company. She also notes that public companies are required by law to reveal more about their finances and performance than small, private start-ups. "Nothing is hidden," Gibb says.

Also, while the promise of instant wealth disappeared, new benefits arose. For example, College411.com had been so small, it had a weak benefits program, says Travis Bowie, co-founder of that firm and now senior manager of business development at Student Advantage. After the acquisition, College411.com staff could participate in a 401(k) program with employer matching funds, and they could receive health care benefits.

Student Advantage allowed years of employment with CollegeClub.com to count toward its 401(k) plan vesting requirements, enabling some IT staff to be fully vested immediately. "A little thing like recognizing an original start date went a very long way with the staff," Gibb says.

> A little thing like recognizing an original start date went a very long way with the staff.
>
> DEBRA GIBB, CIO AND SENIOR VICE PRESIDENT, COLLEGECLUB.COM

TALK EARLY, OFTEN AND HONESTLY

Recognizing these emotional issues and addressing them by communicating early, often and honestly makes a huge difference in how IT employees respond to a merger, say veterans of mergers and acquisitions. One way to successfully manage those issues is to focus on the employment environment first, says Gibb.

"Talk about why the merger is good for both departments and find out what technology and support you can offer the other IT team so their projects are successful," she says. But focusing only on personal finance issues can consume business goals and lead to bad relations, says Gibb, who integrated IT staffs from several acquisitions CollegeClub.com completed before being acquired itself. "You don't want the acquired IT team to hold you hostage," she says.

All of the companies interviewed by *Computerworld* generally created new employment offers for the acquired IT staff. Presentation of such offers is critical. The human resources team at PBSG held individual meetings for every one of the more than 1,000 IT employees, providing them with personalized materials and explaining such things as their new job codes, titles, roles in the new structure, career tracks and reporting structure.

"Your success hinges on how well you deal with people as individuals," says Burchenal, echoing others who've gone through mergers and acquisitions.

Still, not everyone was happy about PepsiCo's consolication efforts, Mann says, noting that some IT staffers had spent long careers working exclusively for Frito-Lay or Pepsi-Cola and had difficulties adjusting to some of the changes that came with new salary structures, such as greater responsibility for managing their own careers.

Yet IT employees who did choose to leave say PepsiCo was completely honest with them about what the creation of PBSG would mean to them, Mann says. "No one felt lied to," he says. "That honesty just defused so many issues." ■

Watson is a freelance writer in Chicago.

Merging two or more staffing and compensation systems can be one of the most difficult aspects of any merger or acquisition. Do it wrong, and employees from both companies can be gone before the deal is ever struck.

By Sharon Watson

◀ DON MANN of PBSG: Merger's impact was personal.

IBM

WEB HOSTING FOR A YOTTABYTE WORLD

Call 1 800 IBM 7777 ask for host or visit **ibm.com**/e-business/hosting

MERGERS

UNDERESTIMATING ACQUISITIONS

In a survey of 125 companies worldwide that have completed acquisitions in the past two years PricewaterhouseCoopers found that three out of four reported problems with integrating IT which caused delays and missed opportunities Nearly **80%** said that if they had moved faster on their IT integration it would have gone smoother according to the New York based consulting company s online publication *re Business*

"Typically companies underestimate the amount of effort required to integrate systems" says Kurt Frers, national leader of transactions services at PricewaterhouseCoopers in Toronto

Also, for the first time in the three years the survey has been conducted acquiring management and technical talent was one of the top five reasons for approving an acquisition **47%** this year vs **33%** last year

SUCCESSFUL INTEGRATION

A successful merger in any industry means addressing four IT issues early in the process:

1. Whose strategy will predominate?
2. Whose technology will survive?
3. Whose organization will persevere?
4. Whose leadership will endure?

ADVICE ON THESE ISSUES

- **Don't fall into the trap of accommodation** like choosing one technology, person or facility from each side
- **Don't be lulled into believing** that the sole objective of a merger is to gain market share or economies of scale
- **Don't get into a holy war** about whose technology architecture is superior
- If this is your first merger **don't assume that the CIO** who brilliantly ran a dependable IT operation is the one to handle either the transition or the merged entity

- Jim Champy, Computerworld columnist

WHO'S TO STAY?

The rule of thumb for a merger is to end up with 70% of the combined staffs, according to Doug LaBoda, vice president of information systems and CIO of the claims services organization at Travelers Property Casualty Corp in Hartford Conn

TOP 10 MERGERS OF 2000

SELLER	BUYER	VALUE (BILLIONS)
Time Warner	America Online	$165.9
Honeywell	General Electric	$44.2
VoiceStream Wireless	Deutsche Telekom	$41.6
SDL	JDS Uniphase	$38.1
J P Morgan	Chase Manhattan	$36.5
Texaco	Chevron	$35.8
Associates First Capital	Citigroup	$30.8
U.S. Bancorp	Firststar	$21.0
Bestfoods	Unilever	$20.2
E-Tek Dynamics	JDS Uniphase	$17.4

SOURCE MERGERSTAT COMPILED BY MARKETFIRE ANALYTICS

JIM CHAMPY

WHEN START-UPS MERGE

BIG MERGER-AND-ACQUISITION deals inevitably get attention. Anyone who glances at headlines is familiar with their names: AOL and Time Warner, General Electric and Honeywell, Exxon and Mobil. The whole phenomenon resembles the mating of elephants. To most of us, the participants seem just a little too outsized for reality. Still, they're real.

Economies and efficiencies of scale are what many such deals are based on Only one corporate staff and headquarters is required Lots of duplication can be eliminated That appears to be the motivation that cemented the GE/Honeywell deal.

Observing the mating of smaller companies, especially those that have IT at their core, also offers some interesting lessons. Because there isn't as much fur flying around, there may be more to see

Many technology start-ups — including the dot-coms — have found that it takes a lot longer to reach profitability than they anticipated These companies' ability to spend cash is astounding — often millions of dollars per month And now, money is coming more slowly from capital markets Many technology start-ups have no option other than to sell or merge

Increasingly, technology-based start-ups will eye one another. After all, their cultures are often similar: entrepreneurial, hard-driving and passionate If these companies can come together, good ideas will be saved and new opportunities created For established companies, this means technology choices will increase and stronger potential business partners will be created.

> *Increasingly, technology-based start-ups will eye one another.*

But merging smaller companies can be challenging The first rule for success is that the two companies and their people must like each other. That means they must have similar or complementary cultures, an advantage that smaller start-ups often enjoy. It's the only way for two companies to work well together.

But putting two struggling start-ups together also requires a precise approach Just hoping for the best won't work. Careful scrutiny must be focused on customers; on potentially differing points of view, especially about markets; and on technology itself.

At all costs, the customer base must be preserved. Most start-ups have usually expended a large portion of their resources on whatever customers they have. That's certainly true of most dot-coms. For some, in fact, customers are their biggest asset. Other than its flashy image, the failed Boo.com, just acquired by Fashionmall.com, had mostly customers to offer

Another rule of a successful merger is to pay as much — if not more — attention to taking care of customers as to internal battles, which often deal with such sensitive issues as who stays and who goes or whose name survives.

Watch for fundamentally different views that may not show up during the first waltz. For instance, start-ups may have very different presumptions about adoption rates of their respective products or services. There may also be very different views about how to market and sell. Also, be sure to get early agreement on the underlying assumptions of a joint strategy.

Finally, avoid the fierce religious wars that often arise over competing technologies. If two companies with different technology platforms (like SAP and Oracle) come together, apply rational analysis and decision-making. If two companies that have built their own technology platforms come together, the battle can worsen. No one wants to give up a personal investment of work and energy.

The truth is that one technology will usually outperform the other; it will offer a better platform on which to get to market faster, require less of an investment or cost less to maintain.

Making the right decisions about which technology to use is critical to success, especially if expenditures are at issue.

Most small technology companies have great ideas. They just may not have the capital or the business form to make them work. But if companies follow these rules, a merger may offer a second chance. ▶

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. He can be reached at JimChampy@ps.net.

This is no way to treat an Internet customer.

A lot of people are spending a lot of time online these days. That can put a strain on your systems. And your customers' nerves. Call Sprint. We promise 99% busy-free dial-up and 99.99% backbone availability for your customers. Then back our promise with some of the most aggressive Service Level Agreements (SLAs) in the industry. Furthermore, Sprint connects your customers to an all-digital Internet backbone. The only one with self-healing SONET technology. The Sprint network is so fast and reliable, we guarantee that roundtrip backbone delays will not exceed 70 milliseconds. This is exactly the kind of service and speed that Internet customers want and expect. So call 1 877 294-7669 and speak with one of our data specialists. They can help you configure a robust, scalable Internet access solution right on the phone. Call today. Your customers are waiting.

Sign up for a term agreement of one year or more and we'll waive the installation fee.

Let's make contact: 1 877 294-7669, www.sprint.com/ipnow

Sprint.

The point of contact™

Sprint tariffs and restrictions apply. Call for details.

Debate Waged Over the Future of Wireless Ads

Opinions divided on acceptance in U.S.

BY MATT HAMBLEN

WILL U.S. consumers ever willingly accept advertising sent to them over wireless handheld devices?

The answer is yes, say advertising agencies, makers of the devices and companies looking to advertise products — that is, as long as the ads are matched with some inducements, such as free voice or data airtime or instant information, like directions to the nearest train station.

"Corporations will drool over advertising to wireless devices," said Alan Reiter, an analyst at Wireless Internet & Mobile Computing in Chevy Chase, Md.

But some analysts and users said they aren't as optimistic about the prospects for wireless ads.

A big obstacle for advertisers, Reiter said, is that U.S. users must pay airtime for anything sent to them.

THE NHL's Carolina Hurricanes are advertising over wireless devices.

To overcome this problem, carriers need to adopt policies such as "calling party pays" or flat rates that make receiving ads more palatable, he said.

But as the debate rages on, wireless advertising is becoming a bigger reality than ever in the U.S.

On Nov. 6, New York-based DoubleClick Inc. said it plans to begin trial runs of mobile ads in New York, San Francisco, Chicago and Boston early next year to gauge user acceptance. SkyGo Inc. in San Mateo, Calif., is also conducting through year's end a wireless advertising trial over 1,000 cell phones in Boulder, Colo. And Jiffy Lube International Inc. in Houston has begun offering digital coupons to wireless users.

WindWire Inc. in Research Triangle Park, N.C., is already delivering wireless advertising to mobile users on behalf of clients such as the National Hockey League's Carolina Hurricanes franchise. The ads let handheld users view the previous day's hockey score and the time of the next game, then click on an icon to be connected via wireless voice to a ticket sales agent.

Howard Sadel, director of new media for the Hurricanes, said it's too early to tell how ticket sales will be affected, since the wireless advertising only began in September. But WindWire executives said they believe wireless advertising, while objectionable to some users, will eventually help keep the costs of airtime and wireless content down.

On Nov. 8, wireless device manufacturer L.M. Ericsson Telephone Co. released a study of 5,000 users in its home country of Sweden. Consumers received more than 100,000 messages based on their profiles. In return for the ads, users got free short-message service for their phones.

The consumers were receptive to advertising messages, remembered product names and responded to pitches, according to the study. More than 60% of the trial users said they liked receiving ads targeted to their profile, and 20% sought more information after seeing the ads, according to Ericsson.

The findings might hold true in the U.S. as well. International Data Corp. in Framingham, Mass., recently conducted focus group studies of mobile users and found that "people are very open to Internet and wireless advertising as long as there is a free service" or other inducement, said analyst Callie Nelsen.

But there are critics of wireless advertising.

David Donnell, an internist in private practice in Dallas, uses a wireless service to send prescription refills to pharmacies. He said he is willing to pay $50 a month for the service from ePhysician Inc. in Mountain View, Calif., rather than use a free service that has ads.

"It's a trade-off that I've made," he said. "In 10 years, I've never learned anything from a pharmaceutical ad."

Energy Industry's Enporion Gets Past Its First Auction

BY MARK HALL

With Enporion Inc.'s first auction under his belt, Michael Johnson sounded relaxed and confident. But the CIO of the energy industry's fledgling business-to-business exchange said he knew he had just edged beyond the proof-of-concept stage.

"We have to bring liquidity to the marketplace," Johnson said. "We need to continually add buyers to attract sellers."

Johnson's challenge of creating liquidity is one that confronts most business-to-business exchanges. It's also one that's held in check by Web-based systems that lack the ability to handle basic business processes such as financing or insuring deals.

Chicago-based Enporion's advantage is that its initial customer base is made of its seven founding members — Allegheny Energy Inc., Allete (formerly Minnesota Power), Ameren Corp., CMS Energy Corp., KeySpan Corp., PPL Corp. and UGI Corp. — which form a large buying block to attract sellers.

The idea for the exchange sprang from these major energy producers' internal review of what commodities they bought and from whom.

"We established spending profiles of key commodities among the seven founders and placed the spending in the relative commodity buckets," Johnson said. With those commodity spending levels in hand, Enporion was able to determine the important suppliers in categories such as coal and oil.

That kind of detailed information last month helped one of the founders buy in a competitive auction 150,000 dekatherms of natural gas.

CIO MICHAEL JOHNSON says he sees Enporion as the energy industry's commodity and direct-goods marketplace.

But that's only a small first step on a long road to a fully integrated supply chain that embraces more buyers than the seven founders and more sellers than preselected commodity suppliers.

Johnson said he envisions Enporion as the energy industry's commodity and direct-goods marketplace. For it to get there, he said, he must woo suppliers to make their product information accessible from a Web browser to reach more buyers. Only after that happens can he turn his attention to deploying the complex middleware necessary to bring buyers' and sellers' supply-chain systems together so that true commerce can occur.

Craig Johnson, a director at Cap Gemini Ernst & Young in Paris who is helping to implement the Enporion site using technology from SAP AG and Commerce One Inc., acknowledged that business-to-business exchanges are poor reflections of the complexity of business processes in one-to-one trading today.

"When you're talking about business-to-business exchanges today, what you have enabled are buy-sell commitments. That's it," said Craig Johnson. "Buyers and sellers must go off-line to complete the deal."

One business-to-business shortfall has been the financing and insuring of deals done online, said David Chen, the CEO of Portland, Ore.-based GeoTrust Inc., which authenticates users on the Web.

Once companies on an exchange agree to trade, they need to withdraw to paper-based or proprietary electronic data interchange-based financing systems to fund and approve the agreement.

Emily Freeman, a senior vice president at New York-based Marsh Inc., agrees. Her company issues bonds to cover commercial transactions. She said online exchanges are "new vehicles" and need tailored programs.

Freeman's company joined The Hartford Financial Services Group Inc. in Hartford, Conn., to underwrite $100 million worth of exchange trading.

"If trade is going to get off the ground in these online exchanges," she said, "they'll need the financial instruments to get them launched."

MILLION DOLLAR SERVICE

IN SAVINGS

Old Rules Still Apply In New Economy

Experts warn new Net ideas must solve real-world problems

BY JULIA KING
NEW YORK

According to the brochure, the purpose of the Evolving Markets conference that Columbia University and several venture capitalists sponsored here earlier this month was to challenge conventional thinking about the evolution of e-businesses.

Yet nearly all of the venture capitalists, entrepreneurs and business executives on the agenda emphasized that Old Economy fundamentals still apply to online enterprises.

If they're to succeed, new Internet businesses must solve a real-world problem, rather than simply automate an old process, said Jay Walker, founder and chairman of Priceline.com Inc. in Norwalk, Conn.

"Ideas are wonderful, but they're much better when they're hooked up to a problem," Walker said.

Carl Bass, CEO of Buzzsaw.com Inc. in San Francisco, said his firm — a year-old Internet marketplace for architects, builders and suppliers — pinpointed the problems it aimed to solve by talking to the users of software from Autodesk Inc. in San Rafael, Calif. Buzzsaw.com is a spin-off of Autodesk, a computer-aided-design firm.

"Customers said their need wasn't for newer or better design tools. Their problem was moving information" among suppliers, builders, designers and others in the construction industry, Bass said.

Buzzsaw.com functions as a neutral site where users can buy and sell products and services, as well as exchange blueprints, designs and other data to cut production time, Bass said.

But the problem a new venture sets out to solve may change over time. E-Steel Corp. opened its doors in September of last year as a public marketplace serving the $700 billion global steel industry.

CARL BASS: Ask what users need.

"But what we were being asked for from the beginning was to provide private exchanges to our customers," said Peter Regan, vice president of marketing at the New York-based exchange.

Now, e-Steel offers end-to-end integration services, linking buyers and suppliers via private connections over the exchange to collaborate with other firms in their supply chains.

Dot-coms are also partnering with traditional firms for everything from customers to management.

For example, Safeway Inc. in Pleasanton, Calif., formed a partnership earlier this year with GroceryWorks.com, a Dallas-based online grocery delivery service. "GroceryWorks has a viable business model because they leveraged Safeway's purchasing power," said John Fullerton, a senior investment officer at LabMorgan, the venture capital arm of J.P. Morgan & Co. in New York.

Women Face 'Slow Climb'

When **Liz Ryan** left her job as vice president of human resources at U.S. Robotics Corp., she needed to expand her contact list fast. So, in July 1999, just as she was co-founding Ucentric Systems, an Internet content provider, Ryan started Chicago Women In Technology (ChicWIT), a listserv for women in her area. Today, Ryan is the executive director of WorldWIT (*www.worldWIT.org*), a global network of 29 mailing lists from Taiwan to Sydney, with a total membership of about 6,000 women. In a recent interview with *Computerworld*'s Melissa Solomon, Ryan spoke about WIT and the role of women in technology.

Q: What does WIT provide that a coed organization can't?

A: That is the $64,000 question. I don't know if it's that comrades-in-adverse-conditions thing, but they really seem to appreciate that women-centric conversation. And there are men on the list. It's a women-focused list; we're probably not going to go into any discussions about male-pattern baldness, but men are welcome.

Q: How far have women come in technology?

A: They've made headway, but it's still that slow, uphill climb. . . . I think some of the frustration, if you would, at this slowness is that a lot of women hoped — I hoped — that this Digital Economy thing was going to be the last great push for women. Wrong. Did not happen that way. In some cases, I think, especially in the start-up realm, there was some major backsliding — you know, very young guys running companies, frat-boy mentality. We have tons of women in the group who have left start-ups saying, "You know what? I was feeling like I was in a more progressive work position back in Oracle, or Microsoft."

Q: What do you think will be the big push for women?

A: Frankly, economic factors have probably really been the biggest drivers so far. When there's just not a lot of talented people, you learn about diversity fast. Unfortunately, now you begin to read that that tide is going to turn in five or six years, and 10 years from now, [for] young people entering the workforce, it's going to be like when I was coming out of school, like, "Be an accountant; it's safe." They'll be fighting for jobs.

LIZ RYAN: "More women CEOs like Carly Fiorina would be awesome."

Apart from the economic stuff, I would say women in policy-making positions are going to have an impact. More women CEOs like Carly Fiorina would be awesome. And then that leads to women being mentors and helping other women.

Q: What advice do you have for women in technology?

A: I would say, as much as you can possibly force yourself to do [it], say what you think. Don't be reticent; don't be deferential. We're kind of trained to be, as girls. . . . If you really think it's the right thing for the company or the organization or the client or whatever, just say it. If they fire you, you shouldn't want to be there in the first place. And then call me, and I'll help you find another job.

Follow the technology leader...
to the Web and beyond
See and hear from the experts at
www.sas.com/webcast
sas

Don't be mystified by SAN solutions.
The choice is clear.

BROCADE

Combining award-winning Fibre Channel switches and SAN management software, Brocade solutions provide scalability, simplified storage management, system interoperability, and availability. Brocade partners with major storage and systems OEMs and Integrators to provide SAN solutions optimized for LAN-free and serverless backups, storage and server consolidation, disaster tolerance, and high-availability applications. It's no wonder that Brocade is the industry leader—and the clear choice—for SAN solutions.

Just ask the judges at NetworkWorld, who recently gave the Blue Ribbon Award for best product to Brocade SilkWorm switches. Visit www.brocade.com and click on the award to learn more.

©2000 by Brocade Communications Systems Inc. All rights reserved. Brocade and the Brocade logo are registered trademarks of Brocade Communications Systems Inc. in the United States and/or in other countries.

Pulling It All Together

Slumping retailer J.C. Penney is trying to unify multichannel customer information to improve cross-selling opportunities. By Carol Sliwa

THE HOLY GRAIL for any multichannel retailer is to unify its brick, click and catalog systems to create a smoother and more satisfying shopping experience for customers.

But J.C. Penney Co., which has struggled to differentiate its product set and grow profits in its retail division, is discovering that the quest can be a long and challenging ordeal. The Plano, Texas-based retailer recently launched several ambitious projects, including one aimed at integrating customer data and another at managing product content uniformly across all three of its channels.

Unified customer records can help retailers learn more about their customers so they can cross-sell, upsell or directly market additional merchandise on an individualized basis. At the checkout counter, a sales representative might draw attention to brands that a customer favors, or a Web site might be configured to spotlight preferred product lines.

Having an enterprisewide content management system will help J.C. Penney offer all of its more than 200,000 stocked items on its Web site and ease trichannel marketing and merchandising work.

Expensive and Time Consuming

But piecing together a complete multichannel customer history and creating a companywide content management system requires retailers to tie together a plethora of disparate systems, such as databases that house pricing, product, content and legal information. And that integration work can be expensive and time-intensive.

J.C. Penney's effort to identify and pull together information from some 60 databases has stretched completion dates for the projects to next year's holiday season, and "extremely large enterprisewide projects cost upwards into the tens of millions of dollars if they're done right," says Ron Hanners, executive vice president of technology and infrastructure at JCPenney.com. Hanners declined to provide specific spending figures.

"These are mammoth projects. They span years. They span very dynamic teams, working around the world on developing this," says Hanners. "It's pretty overwhelming. I don't think at the beginning we would have even started this project had we thought it was this big."

Industry analysts say J.C. Penney may have no choice, given that competitors are working on similar projects. If J.C. Penney doesn't do the work, it could soon find itself trying to play catch-up.

"Retailers know that a customer who shops in more than one channel spends four times as much as a customer who shops in one channel. So that makes multichannel integration crucial," says Cathy Hotka, vice president of IT at the National Retail Federation, an industry trade group based in Washington.

Adam Sarner, an analyst at Stamford, Conn.-based Gartner Group Inc., says he estimates that 40% of multichannel retailers are currently developing aggressive customer relationship management strategies, recognizing that customers expect a consistent experience across all channels. "A bad experience from JCPenney.com can knock out J.C. Penney stores," he says.

Financial Risk

But such multichannel projects aren't without financial risk for established retailers running on thin profit margins. Wall Street demands profits, and the Web channel represents only a small percentage of sales for J.C. Penney and other multichannel retailers. Sales at J.C. Penney's Web site are on track to triple to $300 million this year, yet that's only a drop in the bucket compared with the $19 billion that its stores and catalog sales are expected to generate.

Whether the multichannel integration work will pay off remains an open question. Gaining a better understanding of customers based on their past buying behavior certainly sounds like the right thing to do. But Michael Szego, a consultant at J.C. Williams Group Ltd. in Toronto, warned that J.C. Penney's return on investment (ROI) likely will be calculated over tens of years.

Hanners acknowledges that preliminary studies show the prospects for a speedy ROI to be "sketchy at best."

"We predict the unified purchase history will be valuable and give us some lift in the business," he says. "But what you never know until you put it in place is if it's business that you'd already get or if it's incremental growth. The thing you're searching for all the time in retail is growth and profitability."

The projects come at a critical time for J.C. Penney. Profits for the company's retail outlets and catalog operations have plummeted nearly 50% from $1.275 billion in 1997 to $670 million last year amid fierce competition for consumer dollars.

Offering Everything Online

One reason the J.C. Penney content management project is so massive is that the online arm decided to offer all the merchandise its stores stock through the Web site. The number of stock-keeping units (SKU) averages 260,000 in any given week; with extended assortments, it could balloon to 500,000 by the end of next year.

None of J.C. Penney's "well-paid, top-quality advisers thought we should put all [SKUs] online," acknowledges Hanners. "Inside the company, if you're a technologist and you have to marshal all that content, guess what? You don't want to either."

But ultimately J.C. Penney viewed the Web channel as an integral part of its core business strategy. "Our customers want choice, convenience, selection and affordability," said Paul Pappajohn, president of e-commerce at J.C. Penney.

Hanners says he estimates that the company will have to boost its staff between 25% and 40%, through contracted labor, to do the necessary work to create a single customer history. Rather than create a massive new database to manage, J.C. Penny is working with consultants to design an architecture that will let browser-based applications pull data from existing databases, says Hanners.

Despite the cost, cross-selling and decreasing customer turnover by even a small amount should add revenue to the bottom line, Sarner says. "These things don't happen overnight," he warns, "but you're giving the consumer more and more connections and easier ways to deal with you, and that's going to work in the long run."

Drive to your great new job in a brand new ~~Yugo~~ BMW 323i

Sign up for a job alert with ITcareers.com...and you could!

ITcareers.com is the only career site that features the complete listing of jobs from ***Computerworld's 100 Best Places to Work in IT.*** Sign up for our FREE Job Alert service today, so that we can notify you via email when one of these job opportunities becomes available. You will automatically be entered into the sweepstakes for your chance to win. See rules below.*

Grand prize choices include:

- a BMW323i
- $25,000 in cash
- a Caribbean cruise

or hundreds of other great prizes!

Take advantage of the red-hot job market, and you could drive to your new job in a brand new BMW323i!

ITcareers.com is the exclusive career service of the ITworld.com Network – CIO, Computerworld, InfoWorld, ITworld.com, JavaWorld, LinuxWorld, Network World, and SunWorld – providing career-improving resources for IT professionals. ITcareers.com also features a broad array of recruitment features and services including job search, email job alerts, career advice, eNewsletters, and Careerwebcasting.

Visit www.ITcareers.com/top100 today and check out the best IT jobs at the best companies.

ITcareers.com

a service of the ITworld.com network

100,000 SWEEPSTAKES OFFICIAL RULES. NO PURCHASE, SALES PRESENTATION, PAYMENT OR CONTRIBUTION NECESSARY. Presented by ITcareers.com. $100,000 Sweepstakes. For a chance to win any prize below, follow entry instructions elsewhere in this offer. Sweepstakes begins 9/5/9[illegible]. Entry must be received by date specified elsewhere or by 1/15/01, whichever is sooner. Winners selected in random drawings conducted on or about 4/30/01 by Ventura Associates, Inc., whose decisions are final, at 1040 6th Ave, NY, NY 10018. Open to legal residents of the 50 United States, Washington, D.C., Canada and (in those areas where made available in Europe, Australia, New Zealand and South Africa) who received the offer. Void where prohibited by law. Consumer Disclosures: Different creative presentations may present different prize choices. Prize levels Grand (through Third will offer a variety of merchandise items such as vacations, electronics, home items, etc. Winners may select any prize offered at level won. Values at a given level will be approximately the same. Approximate retail values (ARV) of merchandise prizes: 1 Grand - ARV $25,000, 1 First - ARV $2,000, 1 Second - ARV $1,000, 50 Third @ ARV $100 each, 1,000 Fourth Prizes - ARV $69 each. Total $102,000. Cash alternative offered for Grand Prize only. All prizes will be awarded. Prizes that cannot be shipped to winner's home by common carrier must be picked up at local dealer. Costs related to use of prizes such as but not limited to taxes, title, license, and registration fees are winner's responsibility. Odds of winning determined by total number of eligible entries received. Estimated maximum distribution: 500 million. Therefore, odds of winning any of the 1,053 prizes will be no worse than 1:500MM. For winners list available after 6/30/01, send self-addressed, stamped envelope by 5/31/01 to: "$100,000" Winners, PO Box 1162, Ellenton, FL 34222-1162. THE FOLLOWING ALSO APPLIES: No mechanically reproduced entries. PURCHASE, SALES PRESENTATION, PAYMENT, OR CONTRIBUTION WILL NOT IMPROVE CHANCES OF WINNING. No responsibility assumed for lost, late, misdirected, damaged, incomplete, illegible or postage-due mail/entries. All entries become property of their respective presenters and will not be returned. Any winner will be notified in writing within 2 weeks of selection unless otherwise specified. Winner may be required at discretion of judges to sign & return an Affidavit of Eligibility/Liability Release and where legally permissible a Publicity Release within 14 days of date on notification. Acceptance of a prize by a minor may require written consent of parent or legal guardian and execution by parent or legal guardian of required documentation. Where offered, trip dates subject to availability; travel must be completed within 12 months of award. Restrictions & blackout dates apply. If a trip is won by a minor s/he must be accompanied by parent or legal guardian. Winner's traveling companion(s) required to sign liability release. Costs for goods or services not specified are winner's responsibility. No substitution of prizes except by Sponsor due to unavailability. Except where prohibited by law, winners consent to use of their names, hometowns, prizes won & likenesses for promotional purposes without additional compensation. Void where prohibited by law. All federal, state, provincial and local laws and regulations apply. Prize values in U.S. currency. No transfer or assignment of prize permitted. Winners responsible for all taxes on prizes. Sweepstakes registered by Ventura Associates, Inc., 1040 Avenue of the Americas, New York, NY 10018, the independent judging organization & may be presented in different creative presentations by different organizations. Ventura Associates, the independent judging organization has provided all prizes at no charge. Ventura Associates, Inc., reserves the right to modify, suspend, or terminate the promotion if it becomes technically corrupted. Employees of presenting organizations, judges, their respective advertising & promotion agencies & any other person or organization directly involved with the promotion and their respective immediate families and household members are ineligible. Canadian residents, to win, must first correctly answer unaided, a time-limited mathematical skill testing question administered by mail. Any litigation regarding the conduct and awarding of a prize in this publicity contest by a resident of the province of Quebec may be submitted to the Regie des alcools, des courses et des jeux. Online entry open only to U.S. and Canadian residents, 18 and older. One online entry per e-mail address and per person per day. Online entry deemed made by authorized holder of e-mail address at time of entry. Online entries must be submitted by date specified elsewhere on this website. No online usage required. To enter by mail: hand print your name, address, daytime telephone number, and the internet location where you found these instructions on a 3" X 5" piece of paper. Insert in a #10 envelope and mail to Sweepstakes Entry, PO Box 752, Ellenton, FL 34222-0752. Mailed entry must be postmarked by the deadline posted elsewhere on this website and received within 7 days thereafter.

OVERSEAS ODYSSEYS

IT consultants who want to reap top projects, pay and prestige might consider an overseas assignment. Here's some advice on how to get along and avoid the pitfalls. By Leslie Goff

PEOPLESOFT implementatioo experience took iodependent IT consultant Micbael Coyle on an international odyssey he'll never forget.

Working his way across Europe, Asia, New Zealand and Australia, Coyle garnered fees of up to $1,000 per day, had his out-of-pocket expenses paid for, was given high levels of responsibility, had just enough downtime to travel for pleasure and saved enough money to put himself through law school.

Along the way, Coyle says, he picked up the equivalent of 10 years' IT experience in three years.

"You cao't really replace 10 years of experience with three," Coyle acknowledges. "But I learned a lot about different technologies, cultures and corporate climates. Going through all these countries, you have to acclimatize quickly to the cultural factors. You cao translate that to adapting quickly to different corporate cultures once you're consulting back home."

Just as U.S. employers recruit IT consultants from abroad to fill the supply-and-demand gap, employers across the globe are often willing to import U.S. talent. While working abroad presents its own set of challenges, U.S.-based IT consultants can find ample work beyond our borders.

Coyle's international consulting trek started when, following nine months as a programmer/analyst on a PeopleSoft Inc. human resources implementation at Stratus Computer Systems in Maynard, Mass., the company sent him to Dublin for a local rollout. After four months soaking up the local culture, he was hooked on the idea of working abroad.

"It seemed like an untapped market," Coyle says. "At that point, I had the travel bug because Dublin was such an amazing experience."

Coyle capitalized on the fact that his grandparents were from Ireland and secured an Irisb passport. That gave him rights to work in any European Unioo country, and his instincts about the market proved correct. Within days of posting his résumé at a U.K. recruiting site, Coyle was bombarded with e-mails and phone calls.

"There was no talent overseas for American [enterprise resource planning] software," Coyle says. "The managers on my projects usually had only six months' experience, so they would throw huge responsibility at me. The receptioo was like, 'Thank God you're here.' "

Coyle worked on a PeopleSoft student administration system at a college in Utrecht, Netherlands; a PeopleSoft human resources implementation at Tele Danmark, the state-run telecommunications and cable company in Copenhagen; another student administration system at the University of Adelaide on Australia's South Coast; and a French internationalization project for a U.K.-based client in London, among others.

While the travel was exciting and the lifestyle even cushy at times — one employer gave him a corporate apartment with full maid service — it wasn't always an easy ride. Finding gigs was the easiest part, Coyle says, noting that international consulting isn't for everyone (see story at right). It requires extreme flexibility, adaptability and considerable savvy in dealing with co-workers.

Coyle quickly learned that he had to curb his American instinct for directness. "You have to relax into their style of doing business," he says. "When you're in a new country, you need to observe how they live, because that's going to tell you something about how they do business."

No Place Like Home

While be found that most IT professionals spoke English, buzzwords have different meanings in different countries, and IT project descriptions and job functions aren't necessarily the same abroad. "You have to learn a new dialect in business-speak each time," be says.

Since he had an EU passport, Coyle didn't have to secure work permits in Europe. In New Zealand and Australia, he notes, job postings indicated that workers must be citizens. In practice, however, "they're so desperate that [the agencies] will pay for you to get work permits," he says.

Now 25, Coyle is studying law at Suffolk University School of Law in Boston, with plans to pursue intellectual property law specializing in IT-related issues. He decided to return stateside when he started missing small, everyday things about home.

"It's funny what you miss — like watching a Red Sox game on TV or eating a peanut-butter-and-jelly sandwich," Coyle muses. "Despite the fact that we all drink Coke and we all eat at McDonald's, the world is still an incredibly diverse place." ◗

Goff is a freelance writer in New York. Contact her at lgoff@ix.netcom.com.

Considerations Before Consulting Abroad

Fraser Dickson, now a software developer at Necho Systems Corp. in Toronto, spent five years working in Bermuda. He was originally recruited as an IT contractor by Squires Resources Inc., an IT staffing firm that works with companies in the Caribbean. Later, he joined a local IT consulting firm and was responsible for bringing new contractors to Bermuda.

Dickson says he evaluated candidates against three criteria, in descending order:

- A cultural fit with the company who could complement the existing staff
- A cultural fit with the country who would represent his company well within the local community
- Technical expertise

Dickson often raised the following questions with candidates:

What are your family obligations? Work permits are available only to the worker and current dependents. If you're divorced, it's not economically realistic to visit your children every weekend. If you have a spouse and children, consider that you'll have a job to occupy you once you're overseas, but your spouse won't. "That often leads to depression, alcoholism and divorce," Dickson says. "And someday you'll move back home; a child born or raised overseas . . . will regard your home as foreign."

Will you encounter problems securing a work permit? If you have legal problems, an arrest record, health problems or certain illnesses, you probably won't get a visa. "Each country has specific rules about who they'll let in and why," Dickson explains. "Any prospective employee that doesn't meet those criteria won't be considered, regardless of their technical skills."

How adaptable are you to being a stranger in a strange land? You must be open to the local culture and willing to participate in it. "Nobody will hire the ugly American who's going to stir up cultural resentments by acting superior to local staff," Dickson says, adding that you may face many of the same biases H-1B visa candidates face in the U.S. "You are a visible minority, likely earning more money then the local citizens, supervising local staff, and some will hate you for that," he explains. "There can be a false perception that you took away somebody's job."

– Leslie Goff

Frankenstein,

Count Dracula,

The Creature from the Black Lagoon

Would you do business with any of these monsters?

HireAbility.com provides a not so frightening, customized alternative to the overwhelming, hard to manage recruitment sites on the Internet today. Whether you're looking for the perfect job or the perfect candidate, HireAbility.com focuses on making the perfect match between IT professionals and the clients that need their skills. Instead of trying to be everything to everybody we focus on what we do best and that's IT!

At HireAbility.com we pride ourselves on our commitment to quality service and customer relations. We're building communities for IT and recruiting professionals, and hiring managers to share information and tap into valuable resources and services. We offer specialized profiles and enhanced searching capabilities, which won't leave you fighting off a variety of unlikely prospects. Also, HireAbility.com's intuitive user-friendly design, contact lists and group e-mailing capabilities greatly improve efficiency.

HireAbility.com the search is over.™

Shared Services

DEFINITION

Shared services are handled by an organization that's been formed to consolidate and support redundant functions, such as accounts payable, for disparate business units. By leveraging economies of scale from a common IT infrastructure, such a group is able to market specific services to business units.

BY ELIZABETH FERRARINI

YOU DON'T have to sell Jack Cooper on the concept of shared services. Since 1997, productivity cost savings from Bristol-Myers Squibb Co.'s Global Business Services (GBS) unit have yielded the New York-based firm a cool $1.5 billion per year. The cost savings will be reinvested in areas like sales staffing and research "that will increase our competitive strengths," says Cooper, CIO at the $20 billion pharmaceutical company.

In 1995, a Bristol-Myers task force determined that the company could easily cut costs and improve productivity in two key areas: financial-transaction processing and manufacturing. The idea was to consolidate similar functions in each of these two areas across all of Bristol-Myers' global business units. "We didn't need 85 worldwide locations processing invoices," Cooper says.

A two-year re-engineering effort resulted in an integrated SAP-based enterprise resource planning network run by Bristol-Myers' Princeton, N.J.-based GBS group. The system handles everything from order entry to production sourcing.

"We formed an IT shared services [unit] to support GBS," says Cooper. "We wouldn't have the economies of scale or control of funds if we didn't have one instant service run by one IT group. Now, Wal-Mart gets one invoice showing all of our brands."

Both GBS and the IT shared services unit allocate their operating costs back to the business units. Specific criteria set by business units measure how each group performs.

"For IT, it's on-time delivery within budget and the business unit's satisfaction rating," Cooper says.

Sharing the Load

Bristol-Myers isn't alone. Nearly half of the Fortune 500 have set up shared services organizations, primarily to support financial transactions, followed by human resources and IT activities, according to Martin Hammer, a partner at PricewaterhouseCoopers in New York. The approach has been successful, he says, noting that "some companies have achieved 30% cost savings gains."

Hammer adds, however, that a company should generate at least $500 million in revenue "to benefit from the economies of scale shared services can provide."

Technology enables just about every type of shared service. However, IT isn't always part of an organization's mix of shared services.

For example, Darcy Volk, director of Blue Bell, Pa.-based Unisys Corp.'s shared services group in Bismarck, N.D., which handles accounts payable, travel reimbursements and sales commissions, must go through the company's central IT department to submit suggested changes to Unisys' three cash disbursement systems. The IT department's advisory board then prioritizes the requests.

> We wouldn't have the economies of scale or control of funds if we didn't have one instant service run by one IT group.
>
> JACK COOPER, CIO, BRISTOL-MYERS SQUIBB CO

IT shared services typically fall into two camps: transactional, such as data center operations, network services, help desk and maintenance; and professional services, such as application development and telecommunications.

The IT group at Rogers Shared Services handles all desktops, networks and call center support for its parent company, Toronto-based Rogers Communications Inc., Canada's largest cable and wireless company.

Ronan McGrath, Rogers Shared Services' president, says the group spent two years streamlining its IT infrastructure, implementing Microsoft desktops, Oracle databases, Cisco internetworking and EMC storage. Since Rogers' operating companies are experts on their own core businesses, McGrath says, "we decided that they could do applications development better than us."

Like any shared service, IT has to create a set of standards to work by. These may include operating principles agreed upon by the shared services' governance board and CIO, choices of service offerings and prices, negotiable service-level agreements (SLA) for specific services, a benchmarking procedure to determine if a task should be outsourced or an internal billing procedure to cover fully loaded costs.

For example, Williams Communications Group Inc.'s IT shared services group in Tulsa, Okla., is evaluating several SLA tiers for back-end system maintenance.

Andy Dail, an IT supervisor at Williams, says a platinum tier requires a response to a system request within an hour and would carry a higher charge than a gold tier, for example, which would receive a same-day response.

Freedom of Choice

Barbara Quinn, a partner at Cail Consulting Group Inc. in Victoria, British Columbia, says there's no single, preferred model for an IT shared services unit. The basic model, known as a "community of interest," consists of specific, centralized transactional services that business units must use, such as accounts payable or legal services.

They can also negotiate changes to have their services customized. "If the European business units want their payables in euros, they'll be charged a margin for the upgrade," says Cooper.

Another approach is to use a marketplace model. It consists of professional services that business units aren't required to use but can consider and benchmark against third-party services. To be successful with this model, says Quinn, IT shared services must concentrate on improving service quality and allow line management to enforce corporate software and hardware standards.

In the advanced marketplace model, the IT shared services unit becomes its own company. Originally established as an IT organization to support the five divisions of Netherlands-based Royal Dutch/Shell Group, Houston-based Shell Services International became an independent shared services firm in 1998, marketing its services to other oil and gas companies.

Cooper adds that he believes the goal of a shared services organization must extend beyond achieving cost savings and streamlining operations.

"It must align itself with the business units and work like hell to identify and produce the services they need," he says.

Ferrarini is a freelance writer in Arlington, Mass. She can be reached at elizabethferrarini@yahoo.com.

Shared Services Reading List

Shared Services: Making the Corporate Grid, by Barbara Quinn et al. (Financial Times Prentice Hall, 2000)

Shared Services: Adding Value to the Business Units, by Donald G. Schulman, Martin Hammer et al. (John Wiley & Sons, 1999)

Internal Service Excellence: A Manager's Guide to Building World-Class Internal Service Unit Performance, by Richard D. Hays (Sheed Executive Press, 1999)

Implementing Shared Governance: Creating a Professional Organization, by Tim Porter-O'Grady (Mosby-Year Book, 1997)

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

©2000 Hewlett-Packard Company. Windows is a U.S. registered trademark of Microsoft Corporation. HP-UX Release 10.20, 11.00 and later on all HP 9000 computers are Open Group UNIX 95 branded products.

Most servers replace yesterday's servers. This one replaces tomorrow's.

Introducing hp 9000 superdome, the first enterprise server with the flexibility to match its power. Flexibility that's ready for IA-64, and flexibility to run multiple operating systems like HP-UX, Linux, Windows 2000, and others yet to be. Capacity is flexible too. Scale it up or scale it back, paying less when you use less. With hp 9000 superdome, your options are open. Because tomorrow's another day. hp.com/superdome

invent

JOE AUER/DRIVING THE DEAL

Beware of Vendors Bearing Year-end 'Gifts'

IT'S THAT TIME OF YEAR when many suppliers offer their year-end specials — price discounts and additional goodies — if you sign now. Their motivation is to show year-to-year sales growth and higher incremental profits with a resulting higher stock price.

Driven by this desire to book business before the end of the year, supplier representatives often have the latitude to offer "special-deal" incentives. But remember that vendor reps are highly trained and experienced in using urgency to their advantage. Technology suppliers are well-oiled marketing organizations. Everyone from your friendly account rep up to the vice president is pressured to exceed an annual sales quota.

But for the well-prepared customer, this can be an opportunity.

While the end of the year may indeed be an ideal time to negotiate a good deal, it can also be a trap for the unwary. Haste always makes waste for an IT customer. Don't let a vendor rush you into signing a contract, because you could lose out on further cost savings and contract protections.

Nevertheless, vendors get normally prudent customers to act otherwise by rushing into a contract with lines like: "You know, it's almost the end of the year. We'd like to get your order in this year's business, so we're cutting you a super deal. If we don't get it signed this year, these concessions probably won't be available in January."

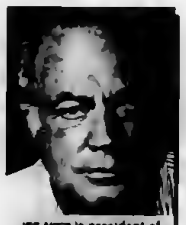
The supplier's motivation may be genuine, but it's using a highly effective ploy that's designed to get you to buy now. The risk to the customer is that be can lose focus and react solely to a good price and other goodies, but at the same time be can also give up warranties, remedies for nonperformance and other valuable contract protections — issues that can cost serious money.

There's no substitute for a thorough analysis of a supplier's offer. In addition to the "great offer," consider these three points:

- Is there a legitimate business need for the product?
- Are there incentives offered that can be of value to the business?
- Are the terms and conditions favorable?

More often than not, these year-end specials come up short when it comes to favorable terms and conditions.

Usually, the supplier insists on using its form contract, arguing that it's necessary to close the deal by the end of the year. Even savvy customers have been known to get excited by the year-end hype, cave in and sign the form agreement. But of all the marketing ploys designed to get a signature on a contract, this one can play into the hands of the well-prepared customer.



JOE AUER is president of International Computer Negotiations Inc. (www.dobetterdeals.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at joe@dobetterdeals.com.

Keep in mind that the vendor's "super" offer should be considered only a point of departure for negotiations. Begin negotiations the first moment the acquisition is contemplated, not the last. From that point, a persistent and logical pursuit of your concerns will help convince your vendor's salesperson that there is a deal to be made, but it's a matter of "resolving a few things first."

It's also important to recognize that even if both sides would like to do a deal by the end of the year, you must focus on what's truly important, like service levels, warranties, remedies for ooperformance, broad rights to intellectual property, results-oriented support guarantees and absolute clarity of contract terms and conditions. Obviously, this is a key time for your procurement team to prioritize its objectives, gain strong consensus and have all members commit to the negotiating position.

If you have any substantial doubts as to whether the deal should be completed by the vendor's sale deadline, the signing of the contract should be delayed. In many cases, when the vendor has used the end-of-the-year ploy and the customer has refused to sign, that "absolute best deal" has continued to be available for months into the new year. This is especially true when the marketing rep is eager to make that first sale of the new year.

Remember: A time limit on negotiations benefits the best prepared, so get ready for the year-end rush.

EXECUTIVE TRACK

F. Lee Marston resigned last month from his post as senior vice president and CIO at Owens & Minor Inc. in Glen Allen, Va. He has moved to Broadlane Inc. in Santa Barbara, Calif., a joint venture formed by Tenet Healthcare Corp., also in Santa Barbara, and Ventro Corp in Mountain View, Calif.

Prior to working at Owens & Minor, Marston was president of U.K.-based The Logistics Technology Group. He also directed the logistics information systems practice at The Progress Group, a Roswell, Ga.-based logistics-consulting firm.

Gary F. Moore recently left his position as senior vice president and CIO at The Chase Manhattan Corp. in New York to become CIO at Driveway Corp., an Internet storage infrastructure provider in San Francisco.

Moore was responsible for implementing Chase's Web properties, customer relationship management practice and e-commerce strategies.

Nick Calabro, 51, has been named executive vice president of information technology at HSBC USA Inc. in New York.

Prior to the appointment, Calabro was president of Republic Services Corp., the IT services arm of Republic Bank in New York.

Richard Kendall has been named the first CIO at the U.S. Department of Energy's Los Alamos National Laboratory in New Mexico. In his new post, Kendall will develop, promote and help direct an integrated vision for information management across the laboratory.

Previously, Kendall was program manager for technical cybersecurity at Los Alamos' former computing, information and communications division.

Rhett Falkner has been appointed to network analyst for information systems at Buffalo, N.Y.-based Rich Products Corp., the nation's largest privately owned frozen food manufacturer. Previously, Falkner was a network engineer at Cleveland-based KeyBank.

BRIEFS

NYCE Gets Personal

NYCE Corp. in Woodcliff Lake, N.J., said it will begin offering person-to-person payments early next year through its automatic teller machine network. NYCE said users will also be able to use telephones to make electronic transfers through its network.

Shopping for Funding

Wachovia Corp. in Winston-Salem, N.C., last week announced plans to launch a business-to-business exchange to serve its commercial customers.

WorkWares.com is scheduled to go live during the first quarter of next year. Four suppliers have signed up - Boise Cascade Corp. in Boise, Idaho; Comark Inc. in Bloomingdale, Ill.; Lanier Worldwide Inc. in Atlanta; and Mark Master Inc. in Tampa, Fla. The four companies offer office supplies, technology products and document management services.

Outsource Deals Top $8 Billion

Input, a marketing services firm in Chantilly, Va., has estimated that IT outsourcing contracts in the third quarter of this year topped $8.3 billion worldwide, up from $5.4 billion in the same quarter last year. However, that's down from $9.2 billion in the second quarter.

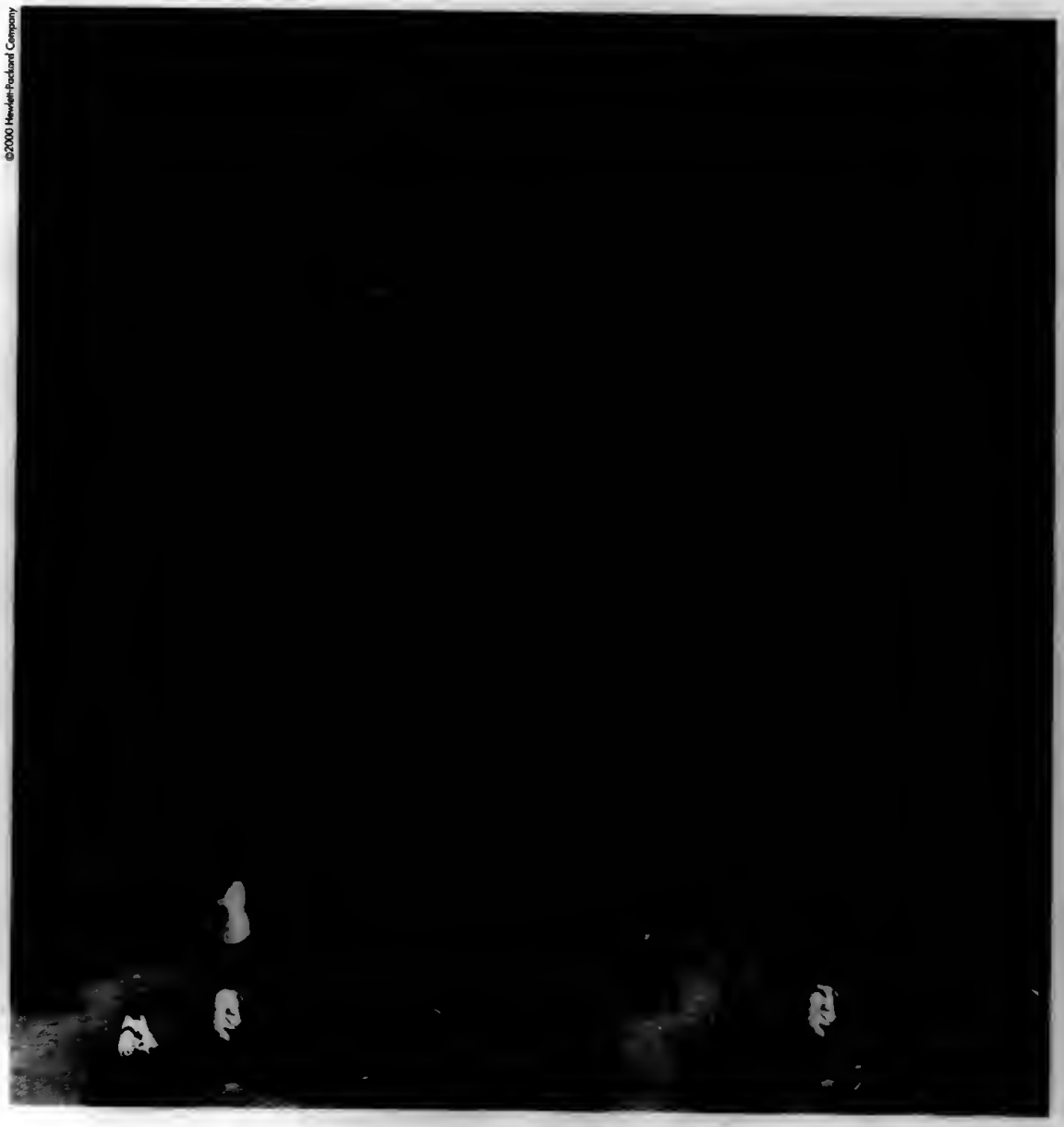
IBM Global Services and Blue Bell, Pa.-based Unisys Corp. grabbed most of the deals, according to Input.

Stock Fraud

Nearly a quarter of all federal securities investigations now involve some form of Internet-related stock fraud, according to the Securities and Exchange Commission.

The most recent wave of cases brought by the SEC have focused on stock manipulation schemes that use e-mail and other online forms of communication to create a market for a particular stock for which no strong demand would otherwise exist. The SEC said it's brought 88 Internet-related fraud cases this year, compared with 55 last year.

©2000 Hewlett-Packard Company



A box without service is a box.

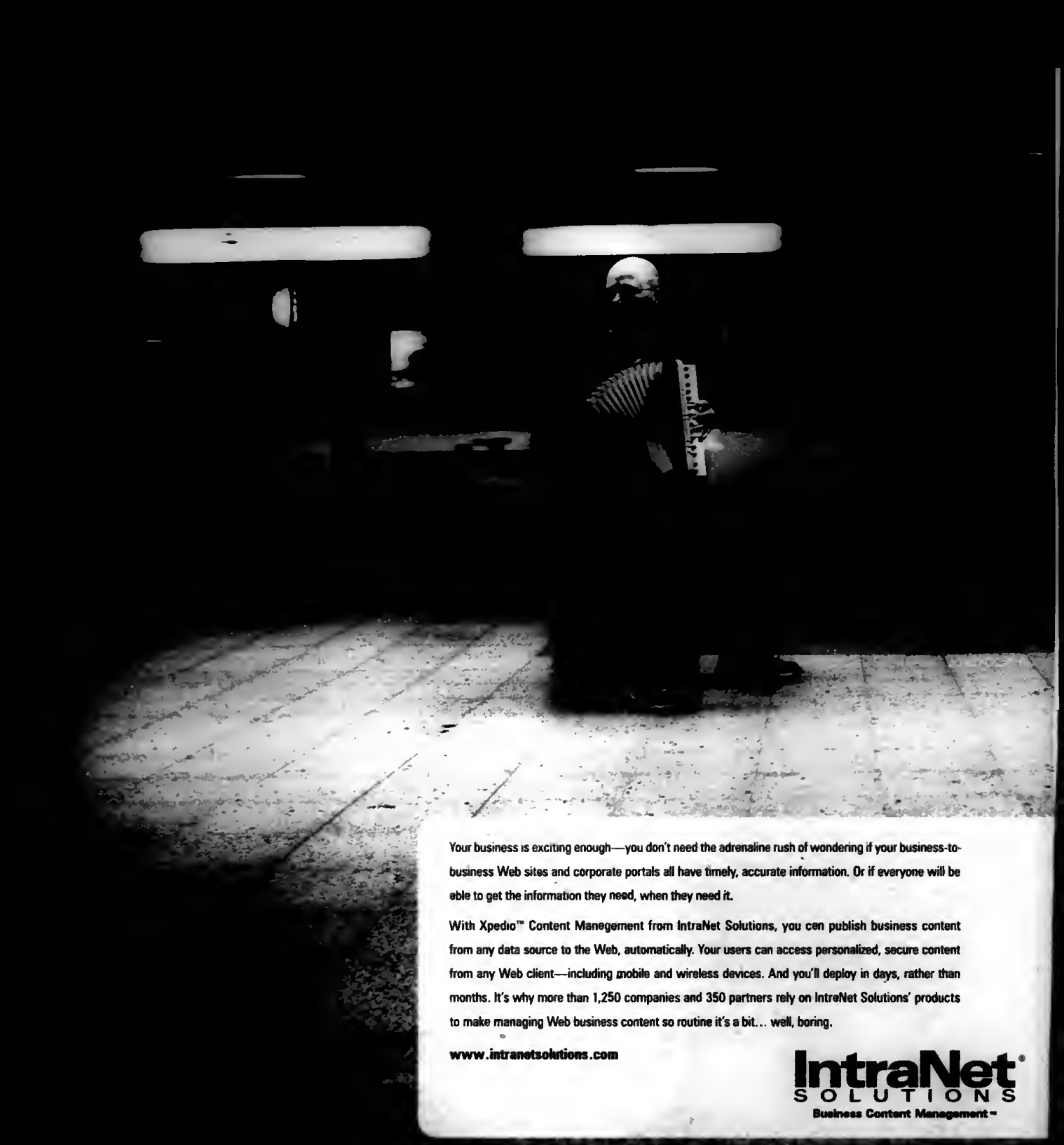
With hp people, hp 9000 superdome becomes a solution, instead of a server.

Service is comprehensive and included. We handle site planning, integration services, customized training, and monitoring.

It's service made simple. So simple, in fact, that we can adjust your capacity over the phone.

Without, ironically, a service call. hp.com/superdome

invent



Your business is exciting enough—you don't need the adrenaline rush of wondering if your business-to-business Web sites and corporate portals all have timely, accurate information. Or if everyone will be able to get the information they need, when they need it.

With Xpedio™ Content Management from IntraNet Solutions, you can publish business content from any data source to the Web, automatically. Your users can access personalized, secure content from any Web client—including mobile and wireless devices. And you'll deploy in days, rather than months. It's why more than 1,250 companies and 350 partners rely on IntraNet Solutions' products to make managing Web business content so routine it's a bit... well, boring.

www.intranetsolutions.com

IntraNet® SOLUTIONS
Business Content Management™

IntraNet Solutions is a registered trademark and Xpedio is a trademark of IntraNet Solutions, Inc.

TECHNOLOGY

DATA EVERYWHERE

MicroStrategy plans to integrate wireless data transmission capabilities from Aether Systems into the next version of its flagship data mining software, giving users the ability to access corporate info wherever they go. ▸ 66

TALKING ABOUT BENEFITS ONLINE

Tony Scott, CTO of information systems at GM, discusses with reporter Lee Copeland the importance of a new portal project to give blue-collar workers home access to benefits data via the Web. ▸ 67

SECURITY JOURNAL

Jude decides to see bow the other half lives. Setting up a Linux workstation as a test system, our security manager downloads hacker tools to see just bow vulnerable bis system is. ▸ 70

EXEC TECH

Speech recognition software from Lernout & Hauspie gets a thumbs up from reviewer Joy Blake. Confirmed typists who always tbought voice recognition was a gimmick should be prepared to start dictating to their computers. ▸ 72

FUTURE WATCH

The idea of an elevator running between Earth and space has long been the fodder of science fiction writers. But now, scientists tell us that by the end of the 21st century, we may really be able to use such a machine to transport people and goods. With the elevator and other infrastructure in place, space will become a popular destination, instead of an adventure for the very few. ▸ 74

SELECTING THE RIGHT SECURITY

Small security services consultancies and larger companies like the Big Five firms take different approaches to technical security problems, and one size doesn't fit all needs. The right choice depends on the project, users say. Here's how to choose the right security services company for your needs. ▸ 76

QUICKSTUDY

Two CPUs in the same computer is nothing special. But what about two processors inside each of those CPUs? Chip multiprocessing will soon be a commercial reality. Find out more in this week's tutorial. ▸ 82

EMERGING COMPANIES

Start-up OpenReach promises to make setting up a virtual private network (VPN) for remote offices quick and cheap. Using its downloadable software and VPN services costs less money than hardware-based VPNs. ▸ 84

MORE

Trendsetters 87

KEEPING CONTENT UNDER CONTROL

THERE WAS A TIME when one webmaster could keep track of all the content on a corporate Web site. But as a few dozen Web pages grew to hundreds and even thousands of pages on some sites, technological assistance became a necessity. *Computerworld* spoke to companies about how content management tools can help ease corporate information overload.

80

MicroStrategy, Aether to Take Data Mining Wireless

BY TODD R. WEISS

For customers of data mining software maker MicroStrategy Inc., the instant availability of their stored data for sales, inventory, shipping and profits is critical.

But until now, MicroStrategy users could get at their databases only when they were in front of their computers.

That problem will soon vanish, the Vienna, Va.-based company said. MicroStrategy recently announced plans to integrate wireless data transmission capabilities from Aether Systems Inc. into the next version of MicroStrategy's flagship data mining software, allowing users to access corporate data wherever they go.

The companies said they will jointly develop a new product, MicroStrategy 7M, which will combine Aether's proprietary Aether Intelligent Messaging (AIM) technology with the functionality of the existing MicroStrategy 7 business intelligence platform. The goal is to deliver personalized information services to a full range of wireless devices, from handhelds to cell phones.

MicroStrategy spokesman Michael Quint said the companies will form a 20-member joint engineering team to develop the MicroStrategy 7M software, which should be available by next June. Aether was selected as MicroStrategy's partner because it has an established customer support system and a dependable wireless infrastructure, Quint said.

Messaging Middleware

Wayne Jackson, a managing director at Owings Mills, Md.-based Aether, said AIM is a middleware messaging layer that allows the efficient transmission of data across any wireless network. "What we allow software developers to do is to build a single standard and deliver those applications to any device over any network," Jackson said.

The Aether product supports most portable devices, including those from Research In Motion Ltd. (RIM) in Waterloo, Ontario, and Symbian Ltd. in London, and operating systems such as Windows CE, Palm OS and Pocket PC, he said. AIM also supports standard application programming interfaces (API) and works at the application layer by utilizing Aether's software development kits, which include libraries for mobile, server, wireless and wireline application development.

Wireless security is provided by a mechanism based on the Elliptic Curve Cryptosystem developed by Hayward, Calif.-based Certicom Corp., using public-key cryptography. This system is used in Aether servers and clients, providing end-to-end security.

MicroStrategy customers using 7M will be able to make one phone call to initiate wireless service with Aether for the new software. Aether will configure compatible devices and ship them to users. Initial equipment fees and monthly service fees will be charged.

Financial services provider Charles Schwab & Co. in San Francisco has used Aether for the past year to provide its clients with wireless capabilities to track their investments, make trades or get real-time confirmation of transactions, wherever they are.

Nasos Topakas, a vice president of technology at Schwab, said its customers use Aether-equipped Palm III or IV personal digital assistants or pagers from RIM to get their information using the PocketBroker software that Aether developed for Schwab.

Francesca Mabarak, a senior analyst at Boston-based research firm The Yankee Group, said the agreement with Aether represents a significant technical boost for MicroStrategy, which is trying to tap into the emerging wireless market and recover from a series of financial difficulties earlier this year.

"MicroStrategy has a good software platform," Mabarak said. "And Aether is one of the best wireless enablers out there today."

Mabarak noted that Aether supports all of the major wireless protocols, including Wireless Application Protocol. "They can support all different kinds of applications and have a lot of good partnerships that allow them to add new services easily and quickly," she said.

Data Mining Goes Wireless

Aether and MicroStrategy have teamed up to give database mining software new wireless data delivery capabilities:

- Proprietary AIM software supports standard APIs and works at the application layer using Aether software development kits.
- Wireless security is provided using public-key encryption based on Certicom's Elliptic Curve Cryptosystem.
- AIM supports most operating systems and portable devices, including Windows CE, Palm, RIM, Symbian and Pocket PC.
- AIM will allow data to be sent to any wireless device using any network.

WE BUY USED COMPUTER EQUIPMENT

PACE/BUTLER CORPORATION
800-319-9355
Fax: 405-755-1114
http://www.pace-butler.com
13900 N. Harvey Ave.
Edmond, OK 73013-2431

FAST • FAIR • FRIENDLY • Since 1987

WITHOUT VITAL SIGNS VISIONNET, YOUR NETWORK IS RUNNING BLIND.

What's happening on your OS/390-based IP network? Now you can see — with Vital Signs VisionNet. It's the performance monitor that brings your entire enterprise into focus, by providing real-time displays and historical data from a single central data repository. Vital Signs VisionNet is the best solution to merge information from multiple stacks and different vendors into a clear unified picture of SNA and TCP/IP. This broad perspective helps you manage your network — large or small — with more ease and accuracy than ever before. See it for yourself. Click on our website for free demo. Go to www.sdsusa.com, and get clear vision, network wide. Or call 1-877-SDS-TCP/IP.

sds
Software Diversified Services • 5155 East River Road • Minneapolis, MN 55421
Phone: 763-571-9000 • Fax: 763-572-1721 • www.sdsusa.com

New Tools Watch WAP Servers

BY SAMI LAIS

Hewlett-Packard Co. has released WAP performance monitoring plug-ins for Nokia Corp.'s Active Server and Tantau Software International Inc.'s Wireless Internet Platform WAP servers.

The plug-ins, which work with OpenView VantagePoint 5.3 and 6.0 e-commerce management suites, are downloadable free from HP's Web site, an HP spokeswoman said.

The U.S. market for Wireless Application Protocol (WAP) servers has been small and until recently has attracted little software development. HP is one of the first "key vendors to come out with WAP monitoring tools," said Corey Ferengul, an analyst at Meta Group Inc. in Stamford, Conn.

The plug-ins offer users an edge in that "they are preconfigured to work with HP's existing performance management software," he said.

The plug-in from Finland-based Nokia will monitor WAP server log files such as average server response time and feed that data into VantagePoint, said Douglas Mason, HP mobile e-services manager.

The plug-in for Compaq Computer Corp. spin-off Tantau, based in Austin, Texas, will offer WAP server availability data via VantagePoint and service reporting via VantagePoint's ServiceReporter. HP will add features to the plug-ins through the first quarter of next year, Mason said.

A third plug-in, for a wireless Web portal from Alcatel SA's France-based subsidiary Nextenso, is set for release next month. It will export data from Nextenso's Simple Network Management Protocol management information base to VantagePoint. During the next six months, HP and other wireless partners will release an additional five or six WAP plug-ins, said HP.

General Motors' CTO Touts Corporate Benefits Portal

To give blue-collar workers access to Web-based corporate benefits systems from home, both General Motors Corp. and DaimlerChrysler AG — in conjunction with the United Auto Workers — have unveiled plans to launch new corporate portals in the first quarter next year. The automotive rivals will also subsidize the cost of getting onto the Web from a PC or TV through America Online Inc.

Tony Scott, chief technology officer of information systems at Detroit-based GM, discussed the importance of the landmark project with *Computerworld* senior editor Lee Copeland.

Q: What's the overarching goal GM is trying to accomplish with this new employee portal?

A: There were a couple of things we were attempting to do. First, give employees the ability to get into the portal from outside our firewall. Today, access is restricted to when employees are at work. Some employees have direct dial-up access, but that is not the majority of people.

Secondly, the portal we have today is one-size-fits-all. As you know, information multiplies tenfold everyday. So the notion of having one portal [that] has the right content for everybody by default is a corrupt notion. We were looking for technology to tailor the portal to push information from GM's side and for employees to modify their information on their own from a pull perspective.

Q: How would the pull part work?

A: Rather than present a stack of online forms replicating what already exists on paper, we allow the employee to drive transactions off life events. If they have a baby, they indicate that, and the system calls up the relevant information that they need to complete based on that event and workflows that information into the back-end system. It takes the paperwork and administrative hassles out of being an employee.

> The notion of having one portal [that] has the right content for everybody by default is a corrupt notion.
>
> TONY SCOTT, CTO, INFORMATION SYSTEMS, GENERAL MOTORS

Q: How many of GM's 200,000 U.S. employees have access to a PC or laptop from which they can get into corporate networks from home?

A: It's not more than 20% that have access to this information from other than at work. Some of our sales, services and marketing people have offices at home with connectivity in various forms, but it's not the majority. And very few blue-collar workers have that kind of Internet access.

Q: Wouldn't most workers prefer to make changes to the human resources data at work?

A: If you're blue-collar, it means going on break or on the lunch hour to the human resources office someplace, which means taking time off the workday. They might even have to make an appointment to do that. So the timetables may be a hassle at work.

Q: Isn't this initiative more important for your blue-collar workers, who don't have a PC at their desks, than for your white-collar workers?

A: We're a large manufacturing company, and a lot of our employees are people who work in manufacturing and the assembly plant. So almost by default, they do not have a PC at their desk.

Q: What is the biggest technical challenge for GM?

A: There aren't any showstoppers, probably as you can guess. The biggest issue with GM is scale. We're going to put over 200,000 employees on this, and Chrysler will put 100,000. That's a large gulp.

Q: Last February, Ford offered its employees discounted computers and Internet access, but GM didn't make a similar offer. Why not?

A: There are three reasons. Our surveys data showed that 75% of GM's employees already had a PC. So we didn't think offering them something they already had would be perceived as having much value. Second, we wanted to give employees choice — a range of options to suit their particular circumstances. And three, we realized when we got into this that the real value came from content and applications, not hardware.

Q: How much of your staff will be dedicated to the project?

A: GM is a heavily outsourced IT model. So most will be employees of [Workscape Inc., a benefits portal vendor], AOL, [Sun Microsystems Inc.'s] iPlanet and other technology partners.

Q: How will you know if you've been successful?

A: Our employees . . . tend to be vocal. If we mess up, they let us know. And if we do a good job, they let us know. ■

IN THE CIRCUIT COURT
FOR TUSCALOOSA COUNTY ALABAMA

CAROL L. WHITAKER and RONALD W. HEIBY on their own behalf and on behalf of all persons similarly situated
Plaintiffs,
-against-
INTERNATIONAL BUSINESS MACHINES CORPORATION
Defendant.

CV2000-1225
CLASS ACTION

SUMMARY NOTICE OF PENDENCY ... SETTLEMENT OF CLASS ACTION

TO: ALL PERSONS IN THE UNITED STATES WHO PURCHASED AN IBM APTIVA PERSONAL COMPUTER OR IBM THINKPAD NOTEBOOK COMPUTER CONTAINING AN "MWAVE" COMBINATION MODEM AND SOUND CARD

THIS SUMMARY NOTICE IS GIVEN TO INFORM ALL POTENTIAL CLASS MEMBERS OF A PROPOSED SETTLEMENT OF THIS LITIGATION. IF YOU ARE A MEMBER OF THE CLASS DESCRIBED BELOW, YOUR RIGHTS ARE AFFECTED BY THIS LITIGATION AND BY THE PROPOSED SETTLEMENT. PLEASE READ THIS SUMMARY NOTICE CAREFULLY AND IN FULL.

[illegible]

Definition of the Class

[illegible]

The Aptivas Covered By The Settlement

[illegible]

The ThinkPads Covered By The Settlement

[illegible]

Summary of Settlement Benefits

[illegible]

Category One. [illegible]

Category Two. [illegible]

Category Three. [illegible]

Category Four. [illegible]

Your Claim Form(s) must be returned postmarked no later than May 27, 2001.

[illegible]

Notice of Fairness Hearing

[illegible]

To obtain a copy of the formal Notice, a Claim Form, and other relevant documents and information, log onto [illegible] or call [illegible] or write to the Settlement Administrator
IBM MWAVE CLASS ACTION SETTLEMENT, P.O. Box [illegible], London, KY [illegible]
PLEASE DO NOT CONTACT THE COURT OR THE JUDGE

Of all the places where you can
improve your company,
this is the most important one

sas

Security Manager Dons Hacker Hat for a Change

Downloaded Linux hacker tools provide new and interesting views into world of corporate computers

FOR ABOUT A YEAR NOW, I've been nodding my head wisely whenever anyone mentions Linux. I have sagely agreed with people that yes, it's definitely a viable commercial operating system; yes, it obviously beats Windows hands down in so many areas; yes, it clearly has so much potential; and so on. Recently, I decided it was time I installed Linux and actually saw it run.

Well, I finally did it, though in the end, I installed it about 10 times because things kept going wrong. Admittedly, some of these errors were due to crass mistakes on my part, but it was still a difficult process.

Most of the mistakes were caused by trying to install Windows 2000 and Linux on the same machine. People have told me that its possible to do it, but in practice, the resulting mess was beyond the abilities of even our resident Linux expert to sort out. I got to the marvelous stage where my machine would power up, check its memory, start loading Linux, display a few dots on the screen and then reboot itself and repeat the process in an infinite loop.

Security Manager's Journal

Tools of the Trade

I've been trying to install Linux because more and more hacker tools seem to be available for it. The combination of power, flexibility and the open-source community seems to be very attractive to hackers. Web sites such as the Nomad Mobile Research Centre and Securify Inc.'s Packet Storm regularly offer new Linux tools. I want to be able to try these tools and see what they can do, just so I can keep an eye on new developments and find out how others could see our network.

So far, I've downloaded five tools: Firewalk, Nmap, Sniffit, Swatch and Tripwire. All are publicly available.

Firewalk was designed to determine what filtering rules your firewall uses and to map the network beyond it. Firewalk is a means of finding what holes already exist in firewalls to allow authorized traffic; an unauthorized attacker could potentially take advantage of this information to gain access through the firewall. The tool was written by someone who delights in deconstructing systems to find out more about them.

Firewalk is a classic example of a "white hat" hacker tool, because it's designed to provide information; it's based on an elegant exploitation of the way another tool (Traceroute) works; and most important, the author provides a detailed explanation of what Firewalk does, how it does it and how to stop it.

Nmap is a network-mapping tool that's very similar to some of the basic functionality of Internet System Scanner from Atlanta-based Internet Security Systems Inc. (ISS). Nmap runs a ping scan of the local network and then runs a port scan and TCP/IP fingerprinting on any hosts on that network.

In other words, it looks around your local network and tells you what machines are connected to it and what operating systems and network services they're running. It's another white hat tool; it provides a great deal of audit information that I'll probably use to check for unauthorized machines and services, but others can use it to find potential ways into our systems.

Sniffit is a packet analyzer, Swatch is a log analyzer and Tripwire is a file-integrity checker. I don't know much about these three yet, but I'll let you know how I get on.

Finding the Time

I'm starting from a bit of a disadvantage because I know almost nothing about Linux, so it's another trip down to the bookshop to buy a couple of Linux books published by O'Reilly and Associates Inc. (I find O'Reilly titles clear, reliable, concise and professional.) That takes the list of security books I need to finish reading up to about six. I'm going away this weekend on a trip with my wife — I wonder how she'll react if I bring a couple of Linux textbooks along?

I've managed to find the time to mess around with Linux because my three main projects are all on hold at the moment. We're rolling out ISS technical scanners and intrusion detection — or we will be when the hardware arrives. We're modifying our antivirus scanners so that workstations pull updates from a central FTP server rather than having them (unreliably) pushed down — or we will be whenever the hardware arrives for the FTP servers.

And I'm supposed to be evaluating the Windows 2000 file-encrypting system against a few commercial cryptography products like PGP from Network Associates Inc. in Santa Clara, Calif., Ironware from AEC Ltd. in the Czech Republic and SafeGuard from Utimaco Safeware AG in Oberursel, Germany — when purchasing gets me my new Windows 2000 laptop.

Stealth-Mode Purchasing

Purchasing isn't my favorite department at the moment. I filed a purchase request (a 5-page form!) for two workstations and attached a copy of the standard workstation specification to make sure that exactly the right kit was bought. A month later, the order finally arrived — one workstation. After all, as purchasing explained in its defense, the standard specification only mentions one machine.

One month wasted because someone misread a piece of paper. I couldn't have made it clearer — it was on the purchase request in big, bold capital letters: two workstations! It's beyond belief.

The only reason I've managed to get hold of a machine to run Linux on is that I'm pulling a bit of a scam that I learned from a consultant with whom I used to work. This seems to work in most companies — as long as you don't try it too often.

The scam works like this: If you want to buy new hardware in most companies, you have to go through a long, slow and painful purchasing process. At the end of it, you get a shiny new PC — eventually.

However, if you get to know your technical support staff well, it's quite easy to persuade them to put together a PC from an old kit — an obsolete CPU here, a battered and dirty keyboard there — just temporary, you understand. Just for test purposes. At the end of it, you get an old PC that barely works.

What use is that? Not much. But wait for the support guy who gave you the old kit to go off-duty. Then call the help desk and say, "My monitor's not working." Someone will come with a replacement. The following day, grab another passing tech-support person, show him the dirty keyboard, ask for a newer one and so on. Most support teams seem to have spare kits for just this purpose!

Sneaky, but if the alternative is dealing with a nitwit purchasing department, sometimes you've just got to be sneaky. ■

THISWEEK'SGLOSSARY

Traceroute: A utility for TCP/IP networks that traces the path of a query packet as it travels to its destination. Used for tracing transmissions and debugging connections between hosts.

LINKS:

http://packetstorm.securify.com
The Packet Storm Web site has downloadable programs like Firewalk.

www.nmrc.org
The home page of the Nomad Mobile Research Centre, a popular site for hackers and the source for the Swatch log analyzer and Tripwire file-integrity checker.

www.insecure.org
Visit this Web site to download the Nmap program.

www.symbolic.it
This link takes you to the Sniffit packet-sniffer utility.

www.pgp.com
Network Associates' Web site for PGP Security encryption software.

www.aec.cz/us/default.asp
Follow this link to AEC's IronWare encryption software.

www.utimaco.com
Utimaco Safeware's SafeGuard encryption software.

■ This journal is written by a real security manager, whose name and employer have been disguised for obvious reasons. It's posted weekly at *www.computerworld.com* to help you and our security manager – let's call him Jude Thaddeus – better solve security problems. Contact Jude at jude.t@lycos.com or click on *Computerworld.com's* Security Watch community forum to participate in discussion topics.

DIGEX

MANAGED WEB AND APPLICATION HOSTING

YOUR SITE NEVER FELT SO SAFE

digex

Computer, Take a Letter!

Speech recognition keeps improving. You've heard that before, but this time, it really is better. By Joy Blake

COMPUTER, listen to me. It's been more than a year since *Computerworld* looked at voice tools, so it's time for a refresher. I opted to focus on Lernout & Hauspie Speech Products NV's Voice Xpress Professional Version 5 because it was the most recently upgraded application. A 20-year-plus confirmed touch typist, I was skeptical that I'd ever seriously consider dictation as an alternative to using a keyboard. Now, I'm not so sure.

Initial enrollment for Voice Xpress — setting up a new user profile — took less than 15 minutes, but I then spent two hours in the "accuracy building" phase. Despite my initial frustration at the time needed for accuracy building, the results were worthwhile.

The process involves pointing the software at previously written documents, such as e-mail messages, so it can learn your vocabulary. Then, verbal training sessions let it learn your voice and pronunciation. As the system reviews the provided material, it builds a database of added words that the user then trains the software to recognize. Training can be done on the fly or in advance of the dictation session.

The Add and Train menu option lets you enter a word or phrase, then specify its formatting. And I discovered that dictation sessions went much more smoothly if I first created a list of words that might be problematic and trained the system to recognize them. For example, training produced consistently correct spelling and uppercase presentation for *CD-ROM* and *SDRAM*.

There are specialized packages available for the legal, medical and safety industries. Mobile versions, optimized for handheld voice recorders, are also available for users who work primarily from the road.

The Voice Xpress Café is an easy way to try the program's most useful features. There's no set progression of lessons; users can jump through them in any order, revisiting any as desired. Lernout & Hauspie recommends going through at least the first 10 lessons, each of which takes approximately 10 minutes.

In my tests, Voice Xpress produced consistently excellent results, whether I used the built-in Notepad, Microsoft Word or Excel. The speech engine had periodic trouble recognizing specific words — *thwarting* and *visa* proved particularly troublesome — but most errors were user-related.

I had to train myself to remember to open and close quotes and parentheses and to specify style-formatting commands. But anything I forgot was easy to correct with the wealth of editing commands that Voice Xpress supports.

Each time Voice Xpress is launched, it goes through quick checks of background noise and microphone volume. If you have to remove your headset for any reason — such as to answer the phone — the adjustment can be run again when you resume. This helps ensure consistently high-quality results.

The program didn't work too well with any background noise present. That's not a problem in my normally quiet home office, but it would likely require a higher-quality noise-canceling microphone in a noisier environment, such as a typical office.

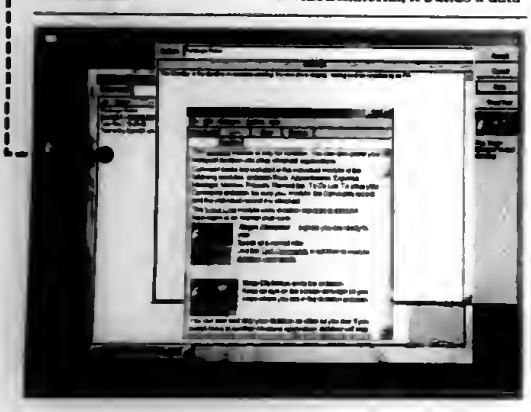
Look, Ma - No Hands!

While speech recognition software won't eliminate my fingers' daily 98-words-per-minute workout, it was a considerable help in writing this review. Hands-free computing allowed me to switch easily between various piles of notes and documentation, pinpointing the material I needed without interrupting the flow of dictation. Anyone coping with repetitive-stress injuries or carpal tunnel syndrome will appreciate the relief of speech-interactive software, as will nontouch typists who struggle with keyboards. (However, extensive dictation raises the possibility of a different sort of repetitive-stress injury.)

And executives and managers who are accustomed to dictating documents and then waiting for the typing pool to transfer them to paper can now be done in a fraction of the time. No fuss, no muss, no bother and — best of all — no transcription necessary.

Blake is a freelance writer in Dover, N.H.

L&H Voice Xpress Professional Version 5
$149.99
Lernout & Hauspie Speech Products USA Inc.
Burlington, Mass.
(800) 380-1234
www.lhsl.com



Voice Pilot Pal
$59.95
Voice Pilot Inc.
Miami
(877) 864-2374
www.voicepilot.com

This Pal's No Friend

In addition to Voice Xpress, I also tried an inexpensive speech product, Voice Pilot Pal from Voice Pilot Inc. in Miami. At less than half the price of Voice Xpress Professional, it's also less than half the value.

I had some initial problems: The program generated errors at launch, and setup was shut down by Windows. Uninstalling and reinstalling didn't help; a patch from Voice Pilot's Web site finally resolved the problem.

Voice Pilot Pal has no enrollment or training facilities and no user profiles. It provides a Voice Information Manager that runs on top of the speech engines from IBM, Lernout & Hauspie, Microsoft or Dragon Systems Inc. in Newton, Mass. It installs Microsoft's speech-to-text and text-to-speech engines at installation time. It just didn't work very well.

Nor was there any real guidance to using the program. There's no user manual. Tech support is available at a cost of $25 to $45. The online help function is barely adequate; there's not a single entry on how to select, correct or format dictated material.

Despite many microphone volume adjustments, I was unable to raise the Pal's recognition to a level that made it usable for more than very basic notes. Although the program tells you to speak with normal vocal rhythms, when I did so, accuracy degenerated. Only by pausing between words could I get better results.

Pal had the most trouble with technical terms, so I tried dictating pieces from my local Sunday newspaper. I thought this sentence would be easily recognized: "An angry constituent called the governor 'chicken' after she ruffled his feathers by defending her tax commission." In 11 attempts, the best I could get was: "In angry constituent called the governor 'chicken' after she rifled his feathers by defending her tax commission." Voice Xpress rendered that sentence correctly on the first try.

Finally, I could get Voice Pilot Pal to work only within its own application; in any other program, the text simply refused to appear on-screen.

– Joy Blake

Triple Performance with Oracle 9*i* Application Server.

Our high-speed cache, coupled with our database, will run your web site three times faster than IBM or Microsoft or we will give you $1,000,000 in cash.

ORACLE
SOFTWARE POWERS THE INTERNET

For important details, conditions and limitations visit www.oracle.com/guarantee

Copyright © 2000 Oracle Corporation. All rights reserved. Oracle is a registered trademark, and Software Powers the Internet is a trademark or registered trademark of Oracle Corporation. Other names may be trademarks of their respective owners.

Going Up... Up... Up

Orbital elevator platforms could provide cheaper access to space for goods and for people. By Mathew Schwartz

YOUR PLANE LANDS on an artificial equatorial island far from any landmass. As you disembark, you look up and see what appears to be a 15-kilometer-high roller coaster attached to a cable that disappears into space. After boarding a large vehicle similar to a railcar, a launcher shoots you up the roller coaster; at its apogee, you connect with the long cable. During the next few hours, your car climbs the cable electromagnetically, without actually touching it, for 21 kilometers, until it reaches a geosynchronous platform. From there, it's a short hop to a weeklong stay on a space station.

Sound far-fetched? Don't cancel that trip to the Grand Canyon just yet, but scientists predict that someday in the latter part of the 21st century, an elevator stretching from Earth to a platform in space could become reality as the cost and time required to construct one become more reasonable.

That news comes from a NASA workshop convened last year by David Smitherman, technical manager in the advanced projects office at the Marshall Space Flight Center in Huntsville, Ala., to discuss the technology needed to build a space elevator. The group determined that it's (barely) technically feasible today to construct a space elevator with existing materials. But experimental or predicted technologies could move the project out of science fiction and onto the drafting boards of engineers.

The concept of a space elevator is simple: Put a platform in space and attach two cables. One goes down to Earth, and the other goes out into space, where it's attached to a captured asteroid. The asteroid counterbalances the platform so it doesn't fall out of orbit.

Because the platform would be in geosynchronous orbit, it would always be above the point where the lower cable attaches to the Earth. Large, high-tech elevator cars then could ride the cable back and forth.

Transformative Technology

As with mountain climbing, having a fixed line makes it easier and cheaper to get things up and down. Compared with today's expensive, disposable booster rockets, a space elevator could reduce the cost of getting cargo or people into space from $22,000 per kilogram to as little as $10 per kilogram. The closest analogy to the transformative power of such a costly undertaking might be America's railways or interstate highway system.

Similarly, with the space elevator, says Smitherman, "the real benefit would be that you would have access to space as easily as you currently have access to the rest of the planet."

Though the space elevator could be built today, it would be very difficult, to say the least: If available composite materials were used, the cable connecting the space platform to the ground would taper from 2 kilometers in diameter at the platform to 1 millimeter at Earth and would have a mass of 60×10^{12} tons. Plus, an asteroid would have to be found, captured and attached in higher orbit to the platform. That, of course, has never been attempted.

VIEW FROM A PROPOSED geosynchronous transfer station at the top of a space elevator. Electromagnetically driven passenger, cargo and maintenance vehicles would travel the 36,000-kilometer distance on one of six carbon nanotube tracks.

The NASA workshop identified five technologies that should help make space elevators a reality:

- **Carbon nanotube cables:** Carbon nanotubes can be grown to produce cable with 100 times the strength of steel but with much less weight. For a space elevator, such cables would have to be no more than 0.26mm in diameter at the platform, tapering down to 0.15mm at the Earth's surface, with a total mass of 9.2 tons. The elevator "cable" would actually be a bundle of carbon nanotube cables, in case any one failed. To date, carbon nanotubes have been grown in lengths of only a few microns.
- **Compression structures:** Advanced composite materials would be needed to make tall towers — as much as 15 kilometers high. These very rigid bases would be used to support and launch vehicles, to avoid many atmospheric conditions at lower altitudes.

In Arthur C. Clarke's 1978 novel, *Fountains of Paradise*, which introduced the notion of a space elevator to the popular imagination, the cables were attached to the top of a mountain on the island of Taprobane.

- **Tension structures:** Elaborate flywheels would help transfer momentum from elevator cars and direct the energy elsewhere. Also, rotating tethers could be used like conveyor belts to move goods between the elevator and predetermined locations in space.
- **Electromagnetic propulsion:** This would allow elevator cars to "ride" the cable without actually touching it, to minimize friction and wear and tear. The concept is akin to today's experimental high-speed trains, which float above their tracks, except it would be vertical. Electromagnetic launch systems — so-called rail guns — could propel vehicles at extremely high initial velocities. To date, however, such launch systems haven't been been very effective.
- **Space infrastructure** (space stations, moon bases, extraplanetary exploration): "There's no need today to build a geosynchronous elevator out to Earth orbit" until there are actually space stations and other places to send cargo and people, says Smitherman. As we build more things in space during the next 20 to 30 years and have the need to shuttle many more things between Earth and space, then an elevator would make sense, he says.

Location Is Everything

The workshop members recommend putting the first space elevator on an artificial equatorial island in the middle of the ocean. There, if the tall tower fell apart, it wouldn't do much damage. Also, the weather is generally favorable.

Finally, building the elevator in international waters might help ease political concerns about its use and encourage international participation.

One thing is for certain: The space elevator must have popular appeal. It would have to be used for a range of activities, including tourism, commercial research and development and manufacturing to be truly useful, according to Smitherman.

Unlike previous missions to space, this one won't succeed if it's only a government project. The space elevator must be for everybody, he says.

POWER. BRAINS. LOOKS.

IT HARDLY SEEMS FAIR.

Easy to Manage Server Appliances.

Looking for an unfair business advantage? Then get our new, scalable, high performance server appliances that are only 1U high, built with lights-out remote management and pre-configured so you can just plug them in and go. Because all's fair in love, war, and, of course, business. 877-638-8277

networkengines

www.networkengines.com

©2000 Network Engines

SIZING UP SECURITY SERVICES

Do large security services firms or small consultancies deliver the best results? It depends on your needs, users say. By Deborah Radcliff

YOU HIRE A SECURITY consulting firm that analyzes your network. On his way out, the auditor leaves you to grapple with an 800-page report listing your network's 60,000 vulnerabilities.

"Sound familiar?" asked Alan Paller, research director of the SANS Institute in Bethesda, Md., as he addressed 300 information security managers and executive officers at a recent security conference. The room erupted with laughter as the group of IT professionals collectively nodded their heads in agreement.

Despite such negative sentiments, IT departments need security services vendors, given the short supply of IT security professionals and the high demand for such services.

Unfortunately, not all service providers are created equal, and the differences are most obvious between the small, independent consulting firms and the Big Five's security consulting divisions. Both groups boast some of the brightest security talent around. But the differences in their areas of practice, styles and methodologies are often like night and day.

Just how does an IT shop find a security consulting firm that's the right fit? First and foremost, it's about aligning business strategies and technology project needs with service offerings, but it's also about relationships, IT managers say.

REQUIREMENTS COME FIRST

Before entering into any vendor relationship, IT departments need to define their business requirements, which will determine the service levels required, says Jerry Dixon, director of information security at $17.7 billion Marriott International Inc. in Bethesda, Md. "Scope and time line will also drive your decision," he adds.

Because of the varying size and scope of technical security projects, Marriott uses a combination of service providers. It uses mostly Big Five consulting firms to augment security work during project development. And when it's already working with a large firm to analyze and assist in a new product launch (for example, a new human resources application), Marriott looks first to that vendor to develop the security strategy and technology infrastructure.

This makes for better continuity, Dixon explains, because the vendor already knows the business and may have developed a standard set of methodologies it can use across the or-

Continued on page 78

CHRIS HARTLOVE

Is your network really secure?

EDS

eds.com

Your digital business can access the world. But remember, it also works the other way around. That's why EDS is committed to providing you with the most innovative information security strategies. We protect you against a growing list of threats by keeping you one step ahead of the bad guys. From virus protection to denial of service to net-access abuse. It's evolved into more than security software. We help you evaluate risks, identify effective safeguards and implement a comprehensive information assurance policy that keeps your business safe and sound. For more information call 800-566-9337 or visit our Web site.

EDS is a registered mark and EDS & Design and Solved & Design are trademarks of Electronic Data Systems Corporation.

Continued from page

ganization. And there's "less finger pointing" if something goes wrong, adds J.R. Williamson, Marriott's vice president of end-user technologies.

Dixon says he also worries about hidden agendas on the part of the Big Five and other large consulting houses, particularly when it comes to recommending security vendor tools. "A lot of times, the Big Five are resellers for specific products, so their bias may not serve us well," he explains.

During his ongoing search for a security consulting firm to assist with new health care patient privacy regulations, Kenneth Cole, MIS director at Sun Healthcare Systems Inc., says he's run into firms of all sizes with agendas to sell certain point products.

"These firms will limit their focus on you because they're only focused on their software," Cole warns.

True, the Big Five and large consulting firms do set alliances with vendors like San Jose-based Cisco Systems Inc., says Ariel Silverstone, senior manager of security solutions at McLean, Va.-based KPMG Consulting LLC, a division of Amsterdam-based KPMG International. But KPMG doesn't require that clients use these products.

"We have created a preferred-vendor list, but that's only based on those vendors' technical merits," Silverstone says. "We do deviate from this list if a customer asks for a specific vendor."

STRATEGISTS VS. SPECIALISTS

Dixon insists that Big Five firms are well-suited to overall security strategies, architectural analysis and other "big-picture work." But when it comes to security assessments or highly specialized work like installing a firewall, he calls on the smaller firms.

"Some of the smaller firms have quite a bit of background in security research — something Big Five firms don't have time for," Dixon says. "And the smaller firms use a lot of custom assessment tools you typically can't find at the Big Five firms. We've had much better success with small security organizations in these areas."

Williamson adds that he's been witness to Big Five-delivered boilerplate assessments that turn up those 60,000 vulnerabilities, providing little or no help in addressing the problems. The smaller firms are more intuitive about what really needs fixing and what doesn't, he says. "Will the larger security company give me an 800-page report that drops the name of their last client and puts your name in the blank? Absolutely," Williamson says.

But Silverstone disagrees. "We do not just give a list of security holes. We give a list of holes, followed by mitigation policy, followed by suggestions on repeated testing," he says. "We also have a severity rating system. When a vulnerability gets to, say, 8 on the Richter scale, we will even stop the project, call the customer and tell them it needs fixing right away."

Silverstone adds that security assessments are KPMG's most sought-after security services, providing KPMG the baseline for all other security services, including penetration tests (attempted attacks on the network to find vulnerabilities), security architecture design, managed services, strategic planning and forensics.

Nonetheless, the IT managers interviewed for this story say the smaller players are more technologically adept at assessment services, in addition to being cheaper.

Michael Morris, IT director at Boston-based Wolf, Greenfield & Sacks PC, uses small vendors to conduct assessments and implement point products. But his 60-attorney firm doesn't have deep pockets. So aside from the lower hourly wage for consultants with a small vendor — $200 to $250 per hour, vs. $300 to $450 per hour at larger firms — he also leverages his vendor's vertical-industry experience to set the appropriate security controls and help spread the security gospel to Wolf, Greenfield & Sacks' partners.

"Because we're in the area of intellectual property law, we have different touch points for security. We can't just build an average firewall with medium security settings," says Morris. "Our vendor [Jerboa Inc. in Cambridge, Mass.] also helped us a couple years ago with a point-to-point encryption program. We actually got PGP [encryption software] to the point where any of our 60 attorneys can use it without too much pain."

Size Does Matter

- **EXPECT LARGE SECURITY SERVICES FIRMS to do well with setting security strategy, general architectural analysis and other big-picture work.**
- **SMALLER CONSULTANCIES excel in focused security assessments, equipment installations and specialized projects that require specific technical expertise.**

KEEP OUT THE COWBOYS

Morris warns of potential trade-offs in quality of service when using smaller firms. "There are a lot of young bucks coming out of college who aren't very well-directed, so they're not learning good business habits, and they run around like cowboys, without any proven practices," he explains. "That doesn't go over well in our industry, because we have so many methodologies in place to protect our client confidentiality."

Many times, Jerboa consultants have had to clean up messes created by such "Rambo" consultants, adds Ian Poynter, the company's founder. "Let's face it. The problem with hiring a small firm is everybody's now a security consultant. We ran into one of these the other day, where a person was trying to break into systems to drum up business," he says.

So check references, conduct background checks if the vendor company doesn't have them readily available and look for several years of both technical and vertical-industry experience when choosing a small vendor, Poynter advises.

THE FINAL CHOICE

While large services firms may have less flexibility to work creatively than smaller firms, they do offer technical practices and methodologies that are important to specific businesses and vertical industries.

But no matter what size company your organization is considering, look for vendors that deliver forward-thinking solutions to technical security problems, says Marriott's Dixon. For example, he says he's been seeing more security services vendors working on scalable security systems at the architectural level — something Jerboa and KPMG have been preaching for two years.

"Vendors are following a lot of new security standards and methodologies, like the Common Criteria," which is a National Institute of Standards and Technology-sponsored security evaluation program for vendor products, as well as British security standard 7799, which has been proposed as International Standards Organization standard 17799, Dixon says. "The good news is the quality of consulting services has gotten a lot better in the last three years."

TIPS FOR CHOOSING A SECURITY SERVICES VENDOR

1. Know your technical and business objectives up front.
2. If the security work relates to a larger technology project, look first to the vendor supporting that project for security services.
3. Know what you're getting. Users complain that some security assessments are simply boilerplate reports that list thousands of deficiencies but provide little direction on how to address them.
4. Watch out for hidden agendas. Ask about vendor relationships that might influence product recommendations.
5. Look for deep expertise in your company's vertical market.
6. Consider vendors with at least three years of experience — and check references.
7. Ask for vendor accreditations and certifications in networking elements, security and auditing.
8. Check consultant staff references to keep "gray-hat" hackers out of production IT environments.
9. Consider background checks and financial viability checks for smaller firms.
10. Watch out for "Rambo" consultancies that have lots of technical knowledge but little understanding of methodologies or business practices.

Continued from page 76

ganization. And there's "less finger-pointing" if something goes wrong, adds J.R. Williamson, Marriott's vice president of end-user technologies.

Dixon says he also worries about hidden agendas on the part of the Big Five and other large consulting houses, particularly when it comes to recommending security vendor tonls. "A lot of times, the Big Five are resellers for specific products, so their bias may not serve us well," he explains.

During his ongoing search for a security consulting firm to assist with new health care patient privacy regulations, Kenneth Cole, MIS director at Sun Healthcare Systems Inc., says he's run into firms of all sizes with agendas to sell certain point products.

"These firms will limit their focus on you because they're only focused on their software," Cole warns.

True, the Big Five and large consulting firms do set alliances with vendors like San Jose-based Cisco Systems Inc., says Ariel Silverstone, senior manager of security solutions at McLean, Va.-based KPMG Consulting LLC, a division of Amsterdam-based KPMG International. But KPMG doesn't require that clients use these products.

"We have created a preferred-vendor list, but that's only based on those vendors' technical merits," Silverstone says. "We do deviate from this list if a customer asks for a specific vendor."

STRATEGISTS VS. SPECIALISTS

Dixon insists that Big Five firms are well-suited to overall security strategies, architectural analysis and other "big-picture work." But when it comes to security assessments or highly specialized work like installing a firewall, he calls on the smaller firms.

"Some of the smaller firms have quite a bit of background in security research — something Big Five firms don't have time for," Dixon says. "And the smaller firms use a lot of custom assessment tools you typically can't find at the Big Five firms. We've had much better success with small security organizations in these areas."

Williamson adds that he's been witness to Big Five-delivered boilerplate assessments that turn up those 60,000 vulnerabilities, providing little or no help in addressing the problems. The smaller firms are more intuitive about what really needs fixing and what doesn't, he says. "Will the larger security company give me an 800-page report that drops the name of their last client and puts your name in the blank? Absolutely," Williamson says.

But Silverstone disagrees. "We do not just give a list of security holes. We give a list of holes, followed by mitigation policy, followed by suggestions on repeated testing," he says. "We also have a severity rating system. When a vulnerability gets to, say, 8 on the Richter scale, we will even stop the project, call the customer and tell them it needs fixing right away."

Silverstone adds that security assessments are KPMG's most sought-after security services, providing KPMG the baseline for all other security services, including penetration tests (attempted attacks on the network to find vulnerabilities), security architecture design, managed services, strategic planning and forensics.

Nonetheless, the IT managers interviewed for this story say the smaller players are more technologically adept at assessment services, in addition to being cheaper.

Michael Morris, IT director at Boston-based Wolf, Greenfield & Sacks PC, uses small vendors to conduct assessments and implement point products. But his 60-attorney firm doesn't have deep pockets. So aside from the lower hourly wage for consultants with a small vendor — $200 to $250 per hour, vs. $300 to $450 per hour at larger firms — he also leverages his vendor's vertical-industry experience to set the appropriate security controls and help spread the security gospel to Wolf, Greenfield & Sacks' partners.

"Because we're in the area of intellectual property law, we have different touch points for security. We can't just build an average firewall with medium security settings," says Morris. "Our vendor [Jerboa Inc. in Cambridge, Mass.] also helped us a couple years ago with a point-to-point encryption program. We actually got PGP [encryption software] to the point where any of our 60 attorneys can use it without ton much pain."

KEEP OUT THE COWBOYS

Morris warns of potential trade-offs in quality of service when using smaller firms. "There are a lot of young bucks coming out of college who aren't very well-directed, so they're not learning good business habits, and they run around like cowboys, without any proven practices," he explains. "That doesn't go over well in our industry, because we have so many methodologies in place to protect our client confidentiality."

Many times, Jerboa consultants have had to clean up messes created by such "Rambo" consultants, adds Ian Poynter, the company's founder. "Let's face it. The problem with hiring a small firm is everybody's now a security consultant. We ran into one of these the other day, where a person was trying to break into systems to drum up business," he says.

So check references, conduct background checks if the vendor company doesn't have them readily available and lonk for several years of both technical and vertical-industry experience when choosing a small vendor, Poynter advises.

THE FINAL CHOICE

While large services firms may have less flexibility to work creatively than smaller firms, they do offer technical practices and methodologies that are important to specific businesses and vertical industries.

But no matter what size company your organization is considering, look for vendors that deliver forward-thinking solutions to technical security problems, says Marriott's Dixon. For example, he says he's been seeing more security services vendors working on scalable security systems at the architectural level — something Jerboa and KPMG have been preaching for two years.

"Vendors are following a lot of new security standards and methodologies, like the Common Criteria," which is a National Institute of Standards and Technology-sponsored security evaluation program for vendor products, as well as British security standard 7799, which has been proposed as International Standards Organization standard 17799, Dixon says. "The good news is the quality of consulting services has gotten a lot better in the last three years."

TIPS FOR CHOOSING A SECURITY SERVICES VENDOR

1. Know your technical and business objectives up front.
2. If the security work relates to a larger technology project, look first to the vendor supporting that project for security services.
3. Know what you're getting. Users complain that some security assessments are simply boilerplate reports that list thousands of deficiencies but provide little direction on how to address them.
4. Watch out for hidden agendas. Ask about vendor relationships that might influence product recommendations.
5. Look for deep expertise in your company's vertical market.
6. Consider vendors with at least three years of experience – and check references.
7. Ask for vendor accreditations and certifications in networking elements, security and auditing.
8. Check consultant staff references to keep "gray-hat" hackers out of production IT environments.
9. Consider background checks and financial viability checks for smaller firms.
10. Watch out for "Rambo" consultancies that have lots of technical knowledge but little understanding of methodologies or business practices.

Ready. Aim. Hire.

ITPROFILER presents qualified candidates from these leading organizations:

Now you can find the right IT talent fast, easy and free at ITPROFILER.com.

ITPROFILER.com is your one and only source for pre-screened, pre-qualified people from the leading consulting firms, IT solution providers and institutes of higher learning. From top talent and solutions in every IT discipline to the best and brightest graduates, you'll find exactly who you need, quickly and efficiently.

Just click onto ITPROFILER.com. Enter your needs using our menu-driven profiling system. Within minutes, we'll present you with a choice of the best, most qualified people *based on your criteria.*

You make better matches, faster. With substantial savings in time and cost. So stop searching. Start finding. Go to www.ITPROFILER.com now.

ITPROFILER.com™

IT talent that fits *your* profile. Exactly.

Join us for a FREE Educational Seminar Luncheon

November 29 - World Trade Center (NY)
December 6 - Ritz Carlton (Boston)

To attend these events, or for more information on upcoming FREE seminars in your area, e-mail us at ***events@itprofiler.com.***

©2000 ITPROFILER, LLC

MARTY [illegible] AM [illegible] thorpe [illegible] should make [illegible] management [illegible]

ANN STATES

Co Co

There can never be too much information on corporate Web sites, provided that it's up-to-date and accessible. Many companies are turning to content management software to help. By Mathew Schwartz

HE FIRST CORPORATE WEB sites contained a few-dozen pages with contact information and repurposed marketing material. A single webmaster could keep track of it all.

But then those Web sites started to grow. Soon, corporate sites had hundreds or thousands of pages, and the webmasters couldn't keep pace witb even basic maintenance.

Theo came e-commerce. All of a sudden, when headquarters changed the price of a widget, every instance of that price on the site had to be found and changed quickly and consistently, lest customers scream.

So it's oot surprising that many companies have beeo adopting content management tools to take the pain out of managing all their intranet and Web pages — wbether it's to provide a unified look for a corporate Web site, keep track of burgeoning company documentatioo or make e-commerce sites easier to modify.

Meta Group Inc., a Stamford, Conn.-based consultancy, says the amount of data inside a corporation doubles every six to eight months, and intranets are already deployed at more than 90% of major companies. International Data Corp. in Framingham Mass., predicts that cootent management adoption will help push the overall documeot and conteot technologies market to $4.3 billion by 2004, reflecting growth at an average rate of 31% per annum from today.

Sometimes, companies turn to content management to help them enforce a consistent look and feel for the Web site. At $4.6 billioo Eastman Cbemical Co., the world's largest supplier of polyester plastics for packaging, eacb business unit maintained its own part of the site, in effect creating the appearance of several "minisites."

Kingsport, Tenn.-based Eastman previously had a Web site that was organized by the company's internal structure, which confused customers by not presenting a consistent interface, says David Holden, manager of e-commerce applications and services at Eastman.

When the original webmaster wasn't able to keep up with all the business units' requests, the units outsourced the material, but that created many differeot types of design on the site. Overlapping product inventory among the business units further complicated matters; product prices often weren't consistent across the site.

As Eastman did an overall site redesign with the help of Independeoce, Mo.-based consulting firm Iexcel.com, the company quickly realized that to maintain order — a single site interface and navigation scheme — it oeeded cootent management software.

Eastman was looking for a tool that would allow the responsibility for updating content to be distributed to content managers around the company while letting a centralized administrator manage the site's overall look and feel, says Holden.

In addition, the tool would need to have templates and not force users to

rralling ntent

learn HTML, so responsibility for content could be placed in the hands of business users.

The company selected Eprise Participant Software from Eprise Corp. in Framingham, Mass.

"We wanted to look at [the site redesign] from a customer perspective," says Holden. So in its redesign, Eastman highlighted products, not business units.

"You can find which applications use that product, which markets it's sold into. But you don't have to know the business organization now," Holden says.

The Eprise implementation and site redesign took about six months, most of which was spent on content. "We had to repurpose an awful lot of content," sometimes eliminating but, more often than not, restructuring it into a different format, says Holden.

Then there was writing the templates. More complicated templates sometimes took two or three iterations to get right. Currently, the site has about 450 products, as well as technical data sheets that were already maintained in a different database. Holden estimates that overall, about 6,500 pages can be dynamically generated, and the site is updated daily.

The site redesign effort paid off when, a few months later, hits to the product areas increased from 30% to 60% of site traffic. "What that tells us is we've been much more efficient in getting information out into the markets that we serve," says Holden. With templates, the company is able to launch a new product on the site in a few days, as opposed to the two to three months it took when coding was outsourced.

Oglethorpe Power Corp. also needed a better way to track its internal information, which, in its case, was contained in documents and included everything from accounting procedures to board policies, news releases and technical diagrams. The $1 billion, Tucker, Ga.-based company provides power to 39 of Georgia's 42 Electric Membership Cooperatives, which in turn provide power to nearly 3 million Georgia residents.

As part of an overall new technology initiative, Oglethorpe was replacing its old Digital Equipment Corp. software, which was no longer supported by the now-defunct vendor but had some document management capabilities. It was also updating all desktops to Windows 98; installing Microsoft Exchange for e-mail; updating NetWare to gain its enterprise directory; implementing 30 new NetWare and NT servers, storage-area network technology and a better tape backup system; and replacing SCSI with fiber to speed connections between servers and storage.

Power Management

Managing company information was a special concern. Due to regulation, deregulation and operating efficiencies, the company had split into three parts: one for power generation, one for transmission and one for operation. One IT department still supported all three. "The need for [content management] has been there for a while," says Oglethorpe CIO Marty Williamson. That's because there was never one place for storing company documents.

Williamson says it's too easy for users to get lost in NetWare directory folders. He wanted keyword and metadata searching for documents and the intranet as a whole, as well as annotation, highlighting and optical character recognition capabilities.

Using a number of criteria, such as features, price and vendor responsiveness, Oglethorpe evaluated a number of vendors, settling on three for the short list: iManage Inc. in San Mateo, Calif.; Open Text Corp. in Waterloo, Ontario; and IntraNet Solutions Inc. in Eden Prairie, Minn. Based mainly on price and functionality, Williamson says, Oglethorpe selected Xpedio from IntraNet Solutions.

The software has just gone live and is backed by three repositories: records, which contains items such as purchase orders and accounting vouchers; general corporate documents, such as PowerPoint presentations or video; and computer-aided design drawings, primarily of power transmission technology. Three different repositories were chosen, says Williamson, "because of the volume of documents, but also because metadata attributes that define how you store the documents, do the searches and so forth are different." Those repositories will drive internal document management and sharing, and where appropriate, such as with news releases, autopopulate the intranet site.

But having software in place doesn't guarantee conformity from the roughly 600 to 900 users, including contractors. "This is going to be tough; we know that. Getting the rigor and processes of document management in place is going to take some education and enforcement, and that's going to hopefully happen over the next few months," says Williamson. But he says he figures that the enhanced productivity from search capabilities and complete audit trails will make it worth the investment.

If the initiative succeeds, it will also transfer more power to the functional areas, lessening the time IT has to spend maintaining content. Each business unit will also be more responsible for such things as its own content administration and security.

At AA.com, the Web site for American Airlines Inc. in Fort Worth, Texas, getting new content onto the site was taking too long. After corporate communications created a specification for new content, it had to be outsourced to copywriters and HTML coders, and it was weeks before the content appeared on the site.

The "one-to-one marketing" campaigns that American wanted to get onto the site more quickly only added to the bottlenecks. That's because every new promotion is actually many different promotions, customized for individual customers.

To reduce the time it takes to create promotions, American installed content management software from Interwoven Inc. in Sunnyvale, Calif., says Joe Sanchez, director of the AA.com customer experience. Implementation was quick, but the challenge will be trying to get the software into the hands of the various subject-matter experts in the firm, each responsible for a little piece of the pie, Sanchez says.

"It's a constant struggle about how much control to maintain," he says, because a balance must be struck between centralized control and reaping the benefits of having many people each tackle a small part of the overall content input.

Sanchez says the newest version of Interwoven's software could make that possible for him, since it integrates fully with Office 2000. He's upgrading soon so users will be able to create and edit all of their documents in Office applications. "The benefit of that is you can bring content management down to the masses," he says. ◗

Write Once, Run Anywhere

If you put together workflow and document management software and add in presentation tools, you end up with content management software. How so?

Workflow software tracks who has access to the software and which parts - authoring, editing or administering - of the process they can influence and in which portions of the site. Templates make sure users input information only in a format the software can understand, and then a document management component keeps track of all that information and stores it in a database. Finally, presentation tools translate the information into the appropriate format, such as HTML.

At one level, the simple allure of content management is precisely its "write once, run anywhere" nature. Once content is in the content management system, pushing it out to wireless, the wireless Web or some future medium will just require new presentation-layer filters for the content management software.

"I wanted something that would grow with us and keep pace with technology," says Trent Langton, production systems manager at *The Monroe Evening News*, an employee-owned local newspaper in Monroe, Mich. The paper's 30 editors and writers use software from OpenPages Inc. in Westford, Mass. All stories are filed and edited using Microsoft Word templates.

Reporters mark up their stories using Word's Style feature. OpenPages then breaks down documents and forwards the information to the newspaper's designers, who use QuarkXpress and publish it to the Web site using presentation templates. With its new software, the paper might also start delivering headlines to wireless devices.

– Mathew Schwartz

Chip Multiprocessing

BY ALAN JOCH

EARLY NEXT YEAR, top-echelon power users will find out if two heads are better than one. That's when Sun Microsystems Inc., IBM, Compaq Computer Corp., Hewlett-Packard Co. and others will start to roll out high-end servers that take advantage of chip multiprocessing (CMP), a step forward from current systems that load up boxes with multiple discrete chip modules. (Conspicuously absent from this group is Intel Corp., which is betting on speed-enhancing instruction-level parallelism, a less-costly performance booster.)

"The driving force here is, rather than create more complicated processors, why not just put two in the same module?" says Linley Gwennap, principal analyst at microprocessor consulting firm The Linley Group in Mountain View, Calif. "The real problem is, unless operating systems really understand you have pairs of processors, it's not clear you'll see a big benefit." He adds that over time, operating systems will become multiprocessor-chip-savvy, but the programming hurdles will be difficult to overcome.

Early tests are showing that two processors in a single module outperform multiple discrete processors by 50% or more. By putting two CPUs on a single piece of silicon, engineers can take advantage of shorter distances and faster bus speeds when shuttling data between the two CPU cores. The net performance result for IBM's version — called the Power4 processor — is the ability to process 100GB of data per second, or the equivalent of 20 full-length DVDs, says Joel Tendler, director of technology strategy at IBM's server group in Austin, Texas.

> DEFINITION
>
> **Chip multiprocessing** is a soon-to-be commercialized technique in CPU design that combines two or more processor cores on a single piece of silicon (called a die) to enhance computing performance over servers with single or multiple discrete CPUs. It's also known as "on-chip multiprocessing" or "multiple-processor system-on-a-chip."

Data-crunching like that will likely come along with astronomical system prices — hundreds of thousands to millions of dollars — that will send CMP systems straight to the high-end technical and commercial market. This includes machines that process seismic data for oil exploration companies, e-business servers able to handle unpredictable traffic loads and spikes, data-intensive graphics imaging hardware and computers that crunch genomic data.

Not every high-end application is right for CMP, however. Financial batch-processing programs that sequentially march through a ledger one task at a time will still rely on single-processor systems.

The age for commercially viable CMP systems has arrived, thanks to continuing refinements in chip manufacturing techniques that let engineers pack circuits more densely. The extra die space opens up room for multiple chips — two in the initial systems but perhaps up to eight in later generations of CMP modules.

But simply squeezing two chips into one housing doesn't necessarily create an efficient multiprocessor. The biggest challenge to engineers is keeping these two-headed power plants stoked with data, and this is where some of the biggest design differences will surface among chip vendors.

Design Contrasts

Due out next quarter, Sun's MAJC-5200 module will include two 500-MHz CPUs, a graphics preprocessor and a data-transfer engine. Data rates for peak I/O will be 4.8GB/sec. The processors will share a 16KB four-way, set-associative data cache, and each CPU will also have its own 16KB, two-way, set-associative instruction cache.

An additional wrinkle in the MAJC-5200 will be multithreading: The hardware will be able to divide processing tasks into bite-size chunks that flow in an orderly way to each core to avoid any missed processing cycles. But Marc Tremblay, chief designer in Sun's processor product group, acknowledges that many software applications aren't optimized for multithreading. To compensate, the MAJC-5200 will use the Java Virtual Machine to speculatively generate threads in Java programs.

In contrast, IBM has chosen not to implement multithreading in its higher-speed, 1-GHz Power4 chip. To keep data flowing efficiently, the Power4 will cram 32MB of memory per chip into a second- and third-level cache to keep chip-to-chip communications flowing and to buffer information retrieved from system memory.

"The challenge you have with all systems when you increase frequency is that memory appears to be farther away," Tendler explains. "[The processing] cycle at 500 MHz is 1 nanosecond; at 1 GHz, it's 2 nanoseconds. So we're adding additional caching to the storage hierarchy."

Bus Speeds Beyond 1 GHz

Initial Power4 systems will use bus speeds of 500 MHz — or half the processor frequency — although the systems are designed for bus speeds greater than 1 GHz to anticipate rising processor speeds over time. IBM expects to release its CMP processor in the second half of next year.

Sun and IBM agree on one thing: Chip multiprocessing is the next big thing in CPU design. In the past, engineers squeezed out faster performance with better process technology, better microarchitectures and better compilers, Tremblay says. Chip multiprocessing adds another performance tool that directly addresses the Holy Grail of processor evolution.

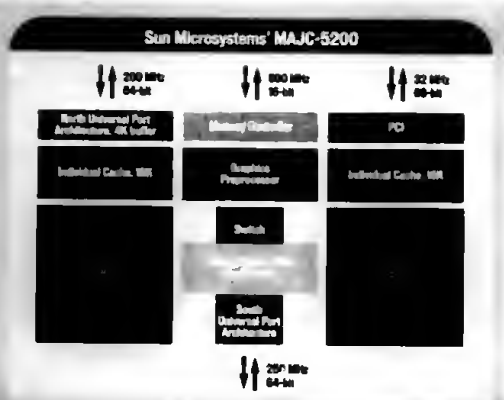
"This could take us beyond Moore's Law," Tremblay says. That's great news for power users but one more challenge for software programmers. ▶

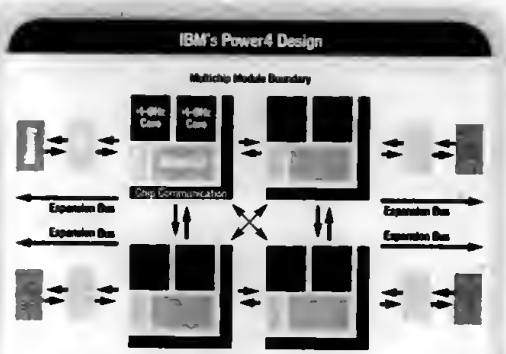
Joch is a freelance writer in Francestown, N.H. Contact him at ajoch@monad.net.

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com*

Two Takes on CMP

Multiprocessor chip designers are taking different approaches to keeping CPUs fed with data. The Sun MAJC-5200 (left) will rely on two sets of 16KB cache reserves and multithreading to keep data flowing efficiently. IBM eschews multithreading in its Power4 design (right) but will pack the module with a second-level cache for chip-to-chip communications and a third-level cache to buffer information retrieved from system memory.





HOT TRENDS & TECHNOLOGIES IN BRIEF

Chip Multiprocessing

BY ALAN JOCH

EARLY NEXT YEAR, top-echelon power users will find out if two heads are better than one. That's when Sun Microsystems Inc., IBM, Compaq Computer Corp., Hewlett-Packard Co. and others will start to roll out high-end servers that take advantage of chip multiprocessing (CMP), a step forward from current systems that load up boxes with multiple discrete chip modules. (Conspicuously absent from this group is Intel Corp., which is betting on speed-enhancing instruction-level parallelism, a less-costly performance booster.)

"The driving force here is, rather than create more complicated processors, why not just put two in the same module?" says Linley Gwennap, principal analyst at microprocessor consulting firm The Linley Group in Mountain View, Calif. "The real problem is, unless operating systems really understand you have pairs of processors, it's not clear you'll see a big benefit." He adds that over time, operating systems will become multiprocessor-chip-savvy, but the programming hurdles will be difficult to overcome.

Early tests are showing that two processors in a single module outperform multiple discrete processors by 50% or more. By putting two CPUs on a single piece of silicon, engineers can take advantage of shorter distances and faster bus speeds when shuttling data between the two CPU cores. The net performance result for IBM's version — called the Power4 processor — is the ability to process 100GB of data per second, or the equivalent of 20 full-length DVDs, says Joel Tendler, director of technology strategy at IBM's server group in Austin, Texas.

> DEFINITION
>
> **Chip multiprocessing** is a soon-to-be commercialized technique in CPU design that combines two or more processor cores on a single piece of silicon (called a die) to enhance computing performance over servers with single or multiple discrete CPUs. It's also known as "on-chip multiprocessing" or "multiple-processor system-on-a-chip."

Data-crunching like that will likely come along with astronomical system prices — hundreds of thousands to millions of dollars — that will send CMP systems straight to the high-end technical and commercial market. This includes machines that process seismic data for oil exploration companies, e-business servers able to handle unpredictable traffic loads and spikes, data-intensive graphics imaging hardware and computers that crunch genomic data.

Not every high-end application is right for CMP, however. Financial batch-processing programs that sequentially march through a ledger one task at a time will still rely on single-processor systems.

The age for commercially viable CMP systems has arrived, thanks to continuing refinements in chip manufacturing techniques that let engineers pack circuits more densely. The extra die space opens up room for multiple chips — two in the initial systems but perhaps up to eight in later generations of CMP modules.

But simply squeezing two chips into one housing doesn't necessarily create an efficient multiprocessor. The biggest challenge to engineers is keeping these two-headed power plants stoked with data, and this is where some of the biggest design differences will surface among chip vendors.

Design Contrasts

Due out next quarter, Sun's MAJC-5200 module will include two 500-MHz CPUs, a graphics preprocessor and a data-transfer engine. Data rates for peak I/O will be 4.8GB/sec. The processors will share a 16KB four-way, set-associative data cache, and each CPU will also have its own 16KB, two-way, set-associative instruction cache.

An additional wrinkle in the MAJC-5200 will be multithreading: The hardware will be able to divide processing tasks into bite-size chunks that flow in an orderly way to each core to avoid any missed processing cycles. But Marc Tremblay, chief designer in Sun's processor product group, acknowledges that many software applications aren't optimized for multithreading. To compensate, the MAJC-5200 will use the Java Virtual Machine to speculatively generate threads in Java programs.

In contrast, IBM has chosen not to implement multithreading in its higher-speed, 1-GHz Power4 chip. To keep data flowing efficiently, the Power4 will cram 32MB of memory per chip into a second- and third-level cache to keep chip-to-chip communications flowing and to buffer information retrieved from system memory.

"The challenge you have with all systems when you increase frequency is that memory appears to be farther away," Tendler explains. "[The processing] cycle at 500 MHz is 1 nanosecond; at 1 GHz, it's 2 nanoseconds. So we're adding additional caching to the storage hierarchy."

Bus Speeds Beyond 1 GHz

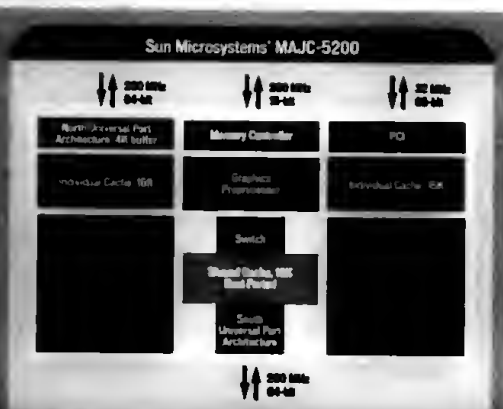
Initial Power4 systems will use bus speeds of 500 MHz — or half the processor frequency — although the systems are designed for bus speeds greater than 1 GHz to anticipate rising processor speeds over time. IBM expects to release its CMP processor in the second half of next year.

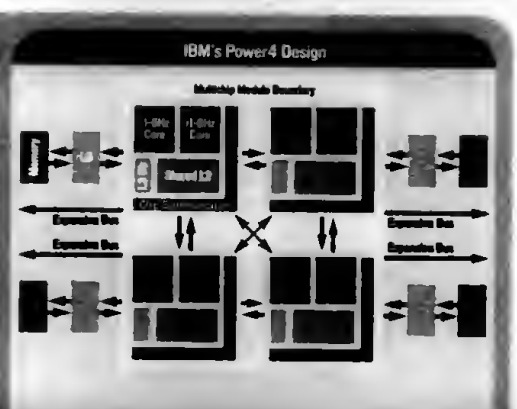
Sun and IBM agree on one thing: Chip multiprocessing is the next big thing in CPU design. In the past, engineers squeezed out faster performance with better process technology, better microarchitectures and better compilers, Tremblay says. Chip multiprocessing adds another performance tool that directly addresses the Holy Grail of processor evolution.

"This could take us beyond Moore's Law," Tremblay says. That's great news for power users but one more challenge for software programmers.

Joch is a freelance writer in Francestown, N.H. Contact him at ajoch@monad.net.

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*





One poll where you don't have to wait for a

Recent events in Florida got you down?
Well, vote in Computerworld QuickPolls and get a little instant gratification in an otherwise fickle world. Our polls offer you instant snapshots on what your peers think of the major issues facing IT professionals across the country and around the world.

And you'll never have to wait for a judge to decide which way the chads should fall.

QuickPoll.
Go there now.

COMPUTERWORLD.COM

Copyright © 2000 Computerworld, Inc. All rights reserved. Reproduction in whole or in part in any form or medium without express written permission of Computerworld, Inc. is prohibited. Computerworld and the respective logos are trademarks of International Data Group, Inc.

Instant, Low-Cost VPNs: Just Add Users

OpenReach's service takes the pain out of setting up virtual private networks

BY AMY HELEN JOHNSON

NETSCAN iPublishing Inc., a legislative and regulatory information publisher on the Web, shuffles 10GB of data per year among its offices in Falls Church, Va., Exton, Pa., and Jacksonville, Fla. The company used to do it the old-fashioned way: via e-mail attachments and file transfer protocol across the Internet via T1, cable-modem and Digital Subscriber Line connections.

Since last summer, when Falls Church-based Netscan signed up for OpenReach Inc.'s TrueSpan service, its employees have been using a new method of exchanging data: sharing files over the company's virtual private network (VPN). For $99 per office per month, Woburn, Mass.-based OpenReach connects Netscan's three business offices over their existing Internet connections.

"It was easy to install and runs reliably," says Harvey Golomb, Netscan's president. "The security seems to be excellent. And it's very cost effective."

Low-Cost Alternative

Ease of use and a low price were OpenReach CEO and co-founder Mark Tuomenoksa's goals. Hardware-based VPNs are pricey and difficult to manage, he says, especially for businesses that lack a highly trained technical staff. But by offering TrueSpan as a service, Tuomenoksa says, it can work with low-cost, low-maintenance devices such as PCs. Setting up the VPN requires dedicating a spare PC on the LAN as the gateway and installing a setup disk supplied by OpenReach, he says.

Tuomenoksa identifies the company's network operations center as the key technology foundation for TrueSpan. The network operations center not only drives the service, he says, but it also allows OpenReach to offer features that a dedicated VPN couldn't. For example, the center monitors the state of each client's network connection.

Another benefit of the network operations center, Tuomenoksa points out, is that it enables the TrueSpan service to work seamlessly with a company's existing Internet service provider connections.

For example, many businesses use a connection with a variable IP address. OpenReach's network operations center identifies clients by name, Tuomenoksa says, not by IP address. That lets the network operations center resolve the name to the assigned IP address, as well as reconcile among LAN environments in the various offices linked by the VPN.

At Nebo Systems Inc., an Oakbrook Terrace, Ill.-based health care claims processing and management service, the problem isn't with connecting branch offices; it's with creating a viable, cost-effective extranet. Since August, Nebo Systems has been using TrueSpan to link its central claims office and three client hospitals. TrueSpan was chosen for locations where an alternative — a leased or frame-relay line — would be wildly expensive, says Nebo's director of network administration, Andrew Yashchuk.

According to Yashchuk, Nebo Systems considered other VPN products based on firewall features but rejected them because their complexity put a burden on internal hospital IT people to build and manage the link.

The company couldn't ask its clients to shoulder too high a cost — in terms of time or equipment — of a dedicated connection to a single supplier, Yashchuk says. He even installed the TrueSpan software on a PC himself, then shipped the configured machine to one hospital, which had only to plug it into the LAN.

Furthermore, he says, Nebo Systems can get a TrueSpan connection running and start serving a client in a matter of days, rather than wait several weeks for a leased line.

Next Steps

Sam Alunni, president of Sterling Research Inc. in Sterling, Mass., says one of OpenReach's strengths is its personnel.

Tuomenoksa worked at the former AT&T Bell Labs, and key personnel at OpenReach have a deep understanding of communications networks, says Alunni. "They come out of a culture of thinking in terms of large back-end [network operations center] engineering investments that make things simple for the user," he says.

Tuomenoksa says that OpenReach's next steps are to add remote access for laptops and to offer a wider range of security choices. Once a solid communications framework is in place, he says, OpenReach also plans to offer ancillary services such as application hosting. ▶

Johnson is a Computerworld contributing writer in Seattle.

MARK TUOMENOKSA, OpenReach's founder and CEO, says the company's VPN service focuses on ease of use and price.

OpenReach Inc.

Location: 660 Main St., Woburn, Mass. 01801

Telephone: (888) 783-0383

Web: *www.openreach.com*

The technology: A virtual private network service

Why it's worth watching: Provides an inexpensive, low-maintenance way to link branch offices and remote users

Company officers:
- Mark Tuomenoksa, CEO and co-founder
- Dave Dingott, president and co-founder
- Brion Shimamoto, chief technology officer

Milestones:
- December 1999: Company founded
- June 2000: Service launched
- October 2000: Version 2.0 released

Employees/growth rate: 85, 500% per year

Burn money: $21 million from Polaris Venture Partners and Clarity Partners

Services/pricing: TrueSpan 2.0, available for $99 per month, per location

Customers: Netscan iPublishing, Nebo Systems, A Better Chance Inc.

Partners: IRE Inc., Cobolt Networks Inc., Cable & Wireless PLC, Automatic Data Processing Inc.

Red flags for IT:
- The service is relatively new and has a limited track record
- It offers limited scalability. OpenReach says TrueSpan is best suited for connecting up to 15 branch offices.

COMPUTERWORLD emerging companies

[the buzz]
STATE OF THE MARKET

The Right Mix

Sam Alunni, president of analyst firm Sterling Research, says there's no other VPN vendor that offers exactly the same type of service as OpenReach.

Its features - a network operations center, Internet-based infrastructure and extremely simplified setup and maintenance - meet the needs of organizations that want to connect branch offices, says Alunni. It's also well suited to companies that want a straightforward way to link sites without requiring a lot of technical knowledge on-site.

OpenReach's vice president of strategic marketing, David A. Kelly, says the service is ideal for organizations with six to 15 locations.

Jeff Wilson, executive director at Infonetics Research Inc. in San Jose, says small and regional Internet service providers are the most likely rivals to OpenReach. However, those service providers trail in their implementations of VPN technology, he says. One good niche for OpenReach, he says, is to partner with these smaller providers, using their existing relationships to expand OpenReach's customer base.

OpenReach is in a booming market. Wilson forecasts that worldwide revenues for VPN services, including bandwidth and add-on services, will reach $36 billion in 2004. He says the following companies could become OpenReach rivals:

XO Communications Inc.
McLean, Va.
www.xo.com

XO is the result of a merger between NextLink Communications Inc. in McLean, Va., and Concentric Network Corp. in San Jose. Concentric has historically provided VPNs. If XO keeps that focus, it could emerge as a competitor, Wilson says.

eTunnels Inc.
Seattle
www.etunnels.com

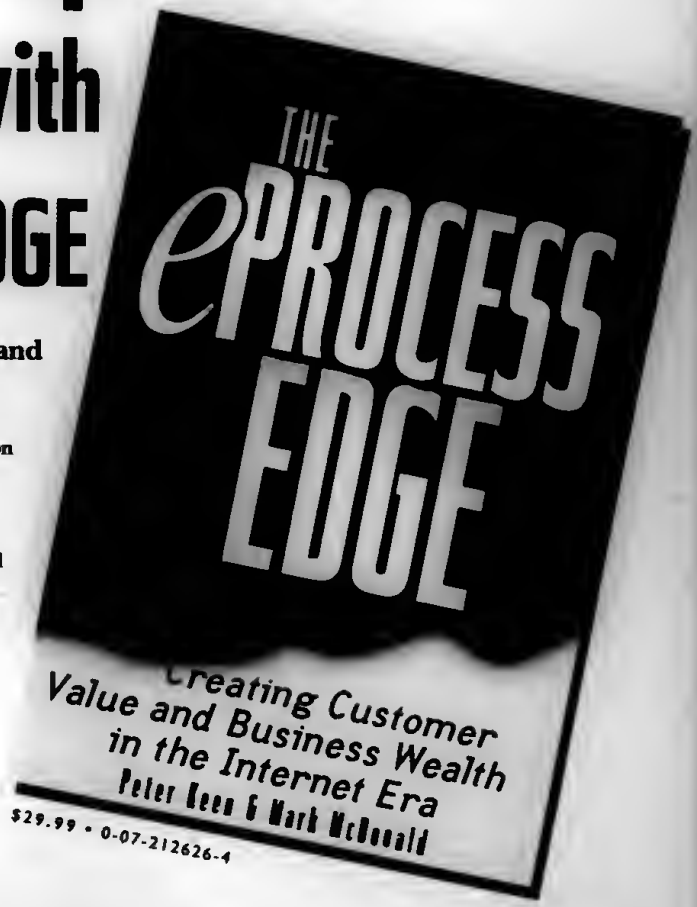
ETunnels also has a software VPN offering, says Wilson. But its VPN-on-Demand is being marketed more to Internet service providers than to customers.

InterNAP Network Services Corp.
Seattle
www.internap.com

Through its July acquisition of VPNx.com Inc. in Redwood City, Calif., peering provider InterNAP became a potential rival to OpenReach.

- Amy Helen Johnson

Gain the competitive advantage with The *e*PROCESS EDGE



Two thirds of all companies do not understand the gap between technology and process.

Do you? The difference between success and commoditization lies with what happens after the click. Business means relationships, not just transitions. The new race is about profits, operations, and process excellence rather than a mad dash to market capitalization. Keen and McDonald have studied over 80 eCommerce projects and companies and they know how to gain the competitive edge. This book does more than set the scene, it goes into how you make the decisions required to gain an edge.

***Peter Keen** advises leading-edge eCommerce companies. In addition, he has taught at Harvard, MIT, and Stanford Universities. In 1994, he was profiled by Forbes magazine as "the consultant from Paradise."*

***Mark McDonald** is an associate partner and director of Andersen Consulting's Center for Process Excellence.*

This book is part of the Computerworld Books for IT Leaders series. Available now at bookstores everywhere or call 1-800-262-4729.

OSBORNE
www.osborne.com

COMPUTERWORLD
BOOKS FOR IT LEADERS

SHARK TANK

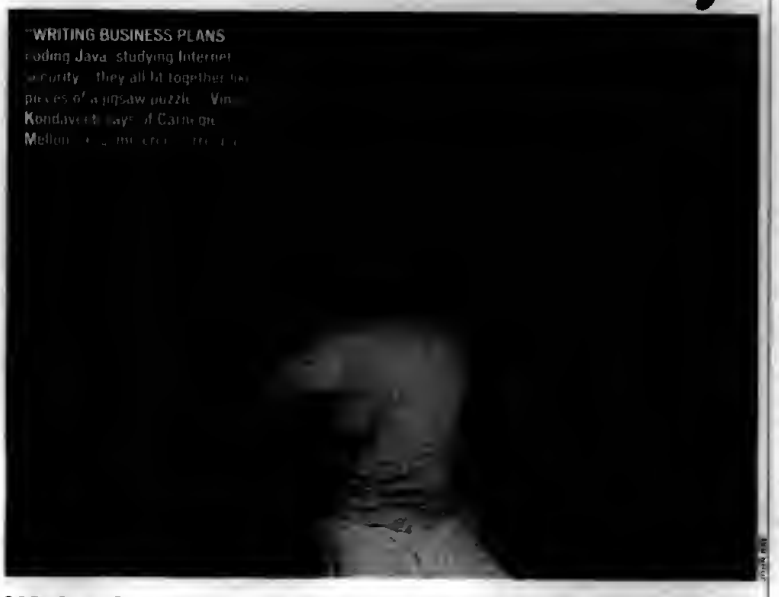
Gossip &
Humor

Anguish...

Get your FREE Daily Feed

www.computerworld.com/sharky

Pioneer for a New Economy



With jobs in e-commerce booming and too few qualified employees to go around, business schools are scrambling to offer special programs to train a new breed of worker. Here's a look at one of the first of his kind. By Zachary Tobias

FOR E-COMMERCE firms or brick-and-mortar businesses branching out to the Internet, finding employees with the right mix of skills can be a challenge.

To provide the e-commerce job market with the well-rounded applicants that are needed, a number of universities are beginning to offer programs that bring together business and IT training, coupling instruction in programming and computer security with classes in finance, marketing and Internet law.

Since most of the programs have opened their doors within the past couple of years, their first graduates are just starting to enter the job market. Here's one recent grad at the beginning of a career full of possibilities.

Graduate: Vincent Kondaveeti, master of science degree in e-commerce

School: The Graduate School of Industrial Administration at Pittsburgh-based Carnegie Mellon University (CMU)

Experience: After getting a bachelor's degree in economics in 1997, Kondaveeti worked for two years as an analyst at Holliday Fenoglio Fowler LP, a mortgage banking firm in Pittsburgh. There, he did demographic research and market reports for a number of multimillion-dollar commercial property deals.

But Kondaveeti was eager to be a part of the Internet economy. "I knew I wanted to shift gears," he says. "And I knew that what the market needs is people who know both business and technology. The CMU program looked like a great opportunity."

The program: The goal of CMU's e-commerce program is to balance IT and business training. To accomplish that, the university brings together professors from its business and computer science schools to teach students everything from accounting to Java and HTML.

The 12-month program, which costs $38,000, is divided into six seven-week semesters in which students take intensive courses in subjects such as electronic payment systems, communications and networking, and supply-chain management.

Kondaveeti says that although the curriculum is diverse, it's also well integrated. "The whole program works together," he says. "Writing business plans, coding Java, studying Internet security — they all fit together like pieces of a jigsaw puzzle."

With so much to cover in such a short period of time, the pace is fast — "worse than boot camp," says Kondaveeti. In his Internet marketing class, for example, Kondaveeti had just four weeks to put together a business plan for an online entertainment portal, including a market analysis, a revenue model and an implementation strategy.

On the IT side, students receive basic training in Java, HTML and Web architecture, as well as security and encryption systems. The year ends with a 12-week practicum in which students work on real-world problems for corporate clients.

Back to work: Fresh out of school, Kondaveeti landed a job in July as a management associate at financial services firm Citigroup Inc. in New York. For the past five months, he's been working on C2it.com, a person-to-person payment Web site that lets customers send money to one another via e-mail.

As a member of the customer experience team, Kondaveeti's tasks have included working on the site's user interface and testing it out on groups of volunteers who offered feedback about the site.

Using the knowledge of Java, HTML and public-key infrastructure that he picked up at CMU, he has also acted as a liaison between the customer experience team and the IT team that does the coding for the site.

Recently, Kondaveeti has worked on designing a system for updating C2it, which launched last month. He has also begun exploring possible business partners for the service's wireless component, which is expected to be added next year.

Since his work on C2it has been part of a rotational program designed to give new employees a broad range of experience, Kondaveeti will soon move to another one of Citigroup's business units. He says he hopes his training makes him the kind of employee companies will be scrambling to hire — and to keep — for years to come. ▶

Tobias is a freelance writer in Santa Cruz, Calif.

At a Glance

Name and [illegible]: Vincent Kondaveeti, [illegible]

Company and location: Citigroup Inc., New York

Nature of his work: Kondaveeti has been working on developing C2it.com, Citibank's person-to-person payment Web site. He has helped design and test the site's user interface, examined potential partners in the wireless arena and developed new processes for updating the site.

Degree program: Carnegie Mellon's Master of Science in Electronic Commerce program, at the university's Graduate School of Industrial Administration

Technology skills learned: Students gain basic proficiency in Java, HTML, Web architecture, and security and encryption systems.

Business skills learned: Course work includes Internet marketing, financial accounting and managerial economics. Students also learn entrepreneurial skills such as how to create and pitch a business plan.

Career path: Some students have gone on to work as consultants, while others have gone to work at start-ups or large corporations. Kondaveeti says he expects to move into business strategy or venture capital at Citigroup.

Advice: Kondaveeti says some background [illegible] especially [illegible] is helpful but isn't [illegible] before entering a [illegible] Keeping [illegible] in the [illegible]

Pioneer for a New Economy

"WRITING BUSINESS PLANS, coding Java, studying Internet security – they all fit together like pieces of a jigsaw puzzle," Vincent Kondaveeti says of Carnegie Mellon's e-commerce curriculum.

With jobs in e-commerce booming and too few qualified employees to go around, business schools are scrambling to offer special programs to train a new breed of worker. Here's a look at one of the first of his kind. By Zachary Tobias

FOR E-COMMERCE firms or brick-and-mortar businesses branching out to the Internet, finding employees with the right mix of skills can be a challenge.

To provide the e-commerce job market with the well-rounded applicants that are needed, a number of universities are beginning to offer programs that bring together business and IT training, coupling instruction in programming and computer security with classes in finance, marketing and Internet law.

Since most of the programs have opened their doors within the past couple of years, their first graduates are just starting to enter the job market. Here's one recent grad at the beginning of a career full of possibilities.

Graduate: Vincent Kondaveeti, master of science degree in e-commerce

School: The Graduate School of Industrial Administration at Pittsburgh-based Carnegie Mellon University (CMU)

Experience: After getting a bachelor's degree in economics in 1997, Kondaveeti worked for two years as an analyst at Holliday Fenoglio Fowler LP, a mortgage banking firm in Pittsburgh. There, he did demographic research and market reports for a number of multimillion-dollar commercial property deals.

But Kondaveeti was eager to be a part of the Internet economy. "I knew I wanted to shift gears," he says. "And I knew that what the market needs is people who know both business and technology. The CMU program looked like a great opportunity."

The program: The goal of CMU's e-commerce program is to balance IT and business training. To accomplish that, the university brings together professors from its business and computer science schools to teach students everything from accounting to Java and HTML.

The 12-month program, which costs $38,000, is divided into six seven-week semesters in which students take intensive courses in subjects such as electronic payment systems, communications and networking, and supply-chain management.

Kondaveeti says that although the curriculum is diverse, it's also well integrated. "The whole program works together," he says. "Writing business plans, coding Java, studying Internet security — they all fit together like pieces of a jigsaw puzzle."

With so much to cover in such a short period of time, the pace is fast — "worse than boot camp," says Kondaveeti. In his Internet marketing class, for example, Kondaveeti had just four weeks to put together a business plan for an online entertainment portal, including a market analysis, a revenue model and an implementation strategy.

On the IT side, students receive basic training in Java, HTML and Web architecture, as well as security and encryption systems. The year ends with a 12-week practicum in which students work on real-world problems for corporate clients.

Back to work: Fresh out of school, Kondaveeti landed a job in July as a management associate at financial services firm Citigroup Inc. in New York. For the past five months, he's been working on C2it.com, a person-to-person payment Web site that lets customers send money to one another via e-mail.

As a member of the customer experience team, Kondaveeti's tasks have included working on the site's user interface and testing it out on groups of volunteers who offered feedback about the site.

Using the knowledge of Java, HTML and public-key infrastructure that he picked up at CMU, he has also acted as a liaison between the customer experience team and the IT team that does the coding for the site.

Recently, Kondaveeti has worked on designing a system for updating C2it, which launched last month. He has also begun exploring possible business partners for the service's wireless component, which is expected to be added next year.

Since his work on C2it has been part of a rotational program designed to give new employees a broad range of experience, Kondaveeti will soon move to another one of Citigroup's business units. He says he hopes his training makes him the kind of employee companies will be scrambling to hire — and to keep — for years to come. ◗

Tobias is a freelance writer in Santa Cruz, Calif.

At a Glance

Name and job title: Vincent Kondaveeti, management associate

Company and location: Citigroup Inc., New York

Nature of his work: Kondaveeti has been working on developing C2it.com, Citibank's person-to-person payment Web site. He has helped design and test the site's user interface, examined potential partners in the wireless arena and developed new processes for updating the site.

Degree program: Carnegie Mellon's Master of Science in Electronic Commerce program, at the university's Graduate School of Industrial Administration

Technology skills learned: Students gain basic proficiency in Java, HTML, Web architecture, and security and encryption systems.

Business skills learned: Course work includes Internet marketing, financial accounting and managerial economics. Students also learn entrepreneurial skills such as how to create and pitch a business plan.

Career path: Some students have gone on to work as consultants, while others have gone to work at start-ups or large corporations. Kondaveeti says he expects to move into business strategy or venture capital at Citigroup.

Advice: Kondaveeti says some background in programming, especially Java and HTML, is helpful but isn't required before entering a program like CMU's. Keeping current on events in the business world is also key. While in the program, take advantage of your classmates' diverse professional backgrounds. "If you're coming from a business background, make sure you get to know the more technical types," says Kondaveeti. "It's a great opportunity to learn an entirely new mind-set."

– Zachary Tobias

Sr. Software Engineer sought by internet e-commerce company in Boulder, CO to, at a senior level, develop e-commerce software applications as well as client/server software applications. Engage in full life-cycle software development. Specifically, analyze requirements. Create designs & design documentation. Code, test, & debug the e-commerce & client/server software applications. Engage in system integration & database design with respect to SQL/Server relational database management systems. Use Cold Fusion development tools & Visual BASIC in the design & development process. Develop & implement functional designs for financial accounting facilities to support other system-wide application processes. Requires Master's or equivalent in Computer Science, Computer Engineering, or related field. Specifically, this position requires a Master's, or foreign degree equivalent, plus 3 yrs of progressively more responsible experience in designing & developing software applications, or a Bachelor's, or foreign degree equivalent, plus 5 yrs of progressively more responsible experience in designing & developing software applications. Working knowledge of SQL/Server database design, including optimization of SQL/Server database structures for large-scale transaction-intensive processing environments & experience developing & implementing functional designs for financial accounting facilities to support other system-wide application processes. $80,000/yr. M-F 8am-5pm. Respond by resume to James Shimada, CO Dept of Labor & Employment, Tower II, #400, 1515 Arapahoe St, Denver, CO 80202 & refer to Job Order No. CO4682750

Senior Software Engineer sought by company in Littleton, CO specializing in home satellite design & manufacturing to work in Littleton & other unanticipated job sites in the US. At a senior level, engage in full life cycle software development. Specifically, design, develop, test & modify software applications that control internal company functions such as financial applications & manufacturing applications. The software applications incorporate client/server architecture & ORACLE Relational Database Management Systems & run on UNIX & Windows NT operating systems. Analyze requirements, create designs & design documentation, code, test, & debug the new software applications. Customize & enhance ORACLE applications; deploy appropriate software solutions & interfaces between custom software applications in ORACLE applications. Use programming languages C, Pro*C & PL/SQL, & a variety of tools including Developer 2000 & Toad Debugging tool. Requires Master's degree or equivalent-specifically it requires a Master's degree (or foreign equivalent) in computer science or related field (including computer engineering), plus three years of progressive experience in developing full life cycle ORACLE software applications, using PL/SQL, C & Pro*C, or a Bachelor's degree (or foreign equivalent) in computer science or related field (including computer engineering), plus five years of progressive experience in developing full life cycle ORACLE software applications using PL/SQL, C & Pro*C. 8am-5pm. M-F. $79,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4683159

MTS-Mathematical & Statistical Modeling (Operations Research Engineer)
Duties: Apply optimization techniques with stochastic demand and supply to improve supply chain management staffing. Develop optimization models to improve business processes. Apply stochastic programming and tabu search methods to develop, code and test algorithms that solve these models. Identify data sources and obtain data for use in the algorithms. Document and present results to clients with varying degrees of technical aptitude. Introduce quality planning and management methods in business processes, as appropriate, to decrease operating costs and improve Qwest's service quality and reliability. Requires: Masters in Computer Science, Operations Research or related field plus working knowledge of (1) Resource planning and scheduling/resource management; (2) Meta-heuristic methods, including tabu search; (3) Network modeling; (4) Stochastic Programming methods; (5) Quality/reliability management and business analysis. Location: Boulder, CO. Working Conditions: M-F 8am-5pm. Salary: $80,300/yr. Reply by resume only to Colorado Department of Labor & Employment, Employment Programs, Attn: Jim Shimada, Tower 2, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to job order number CO4682759

Technical Manager sought by company in Englewood, CO to work in Englewood & other unanticipated job sites in the US. Assess client needs to improve performance of the company's software applications (GIS) which run on Windows NT, HPUX, Solaris, Digital UNIX and AIX in a client-server environment. Define new products, design and implement architecture (relational databases) in technical solutions for GIS software applications, customize software and complete data design to meet client needs, manage resources in cost schedules to insure projects meet financial parameters, lead team of programmer analysts and supervise development team as needed; provide technical support to internal development teams, develop training materials and provide training as needed; utilize Visual Basic, various relational database management systems and proprietary programming languages in carrying out these duties. Requires Bachelor's or foreign equivalent in comp. science or related field, incl. info. tech, 3 yrs. designing software applications & relational database management systems utilizing object oriented programming languages, & customizing & implementing GIS applications. 8am-5pm, M-F, $84,000/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4683152

Computer/Info Systems Manager
North American Technical Customer Support
Based in our Sunnyvale offices, you will be responsible for supervising and coordinating activities of workers in the North American Technical Customer Support team who provide problem-solving and testing support to application builders and original equipment manufacturers using cartographic data. You will also coordinate with internal staff computer users, supervisors, and managers to determine requirements for new or modified software and hardware, while writing recommendations for management review to improve quality of support services for customers. In addition, you will oversee installation of hardware and software, and implementation of procedure changes. You will also assist the Sales Team with the implementation of sales strategies and plans.

We are looking for someone with 1-2 years experience as a digitizer and geocoder, a geography background with a Master in Geographical Information Systems.

Send reply attention to: Yolanda Keller, ykeller@chi.navtech.com or fax to (847) 795-7253. Refer to reference number LIND001. EOE.
Navigation Technologies

SAN Principal Consultant sought by company in Louisville, CO that provides network computing storage to work in Walnut Creek, CA & other unanticipated job sites in the US. Provide consulting services to clients & assist in area of planning & deployment of enterprise storage management systems. Responsible for system engineering, design & implementation of SAN (Storage Area Network) for high-volume enterprise backup systems using UNIX & Windows NT in an open systems arena. Design & implement hardware & software solutions in enterprise wide installation using UNIX & Windows NT. Create, enhance & maintain consulting methodologies for new & existing consulting & product implementation service. Develop technical business solutions in a client oriented environment. Translate client's business requirements into leading edge enterprise back-up & recovery storage management systems, data security, deployment architecture design & asset management solutions at multiple company locations, including locations around the world. Requires Master's degree or equivalent specifically requires a Master's (or foreign equivalent) in comp. sci., eng., or elec. eng., plus 3 years progressive software consulting experience or a Bachelor's (or foreign equivalent) in comp. sci., eng., or elec. eng., plus 5 years progressive software consulting experience. Working knowledge of the design & implementation of hardware & software solutions in enterprise wide installations using UNIX & Windows NT. 8am-5pm. M-F. $88,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202 & refer to Job Order Number CO4683142

Technical Project Manager sought by company in Englewood, CO to work in Englewood & other unanticipated job sites in the US. Assess client needs to improve performance of the company's software applications (GIS & Model.it) which run on Windows NT, HPUX, Solaris, Digital UNIX, & AIX in a client-server environment. Define new products, design & implement architecture (relational databases) in technical solutions for GIS software applications, customize software to meet client needs; manage resources in cost schedules to insure projects meet financial parameters, lead team of programmer analysts & supervise development team as needed; utilize the company's GIS, MapB, Visual Basic & various relational database management systems in carrying out these duties. Requires Bachelor's or foreign equivalent in comp. science or related field, incl. info. tech., 3 yrs. designing software applications & relational database management systems utilizing object oriented programming languages, & customizing & implementing GIS applications. 8am-5pm. M-F. $65,000/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202 & refer to Job Order number CO4683148

CONSULTANTS

ServiceSoft Inc., a provider of diagnostic software products, seeks a Client Partner for its San Francisco, CA office. Will be a liaison in sales to develop business and scope jobs and consulting engagements, and facilitate the pricing of these engagements and staffing. Requires degree and industry experience. If interested and qualified please forward resume to Megan DeBrieled, Administrative Assistant, ServiceSoft, Inc., 1 Sansome Street, Suite 2100, San Francisco, CA 94104

Lead Engineer. Duties: Provide technical leadership for and participate in the creation, delivery and integration of software. Design and develop computer software using various programming languages and tools including COBOL, SQL, JCL, ISPF and C/C++. Provide technical development and support for the enhancement and maintenance of mainframe DB2/IMS COBOL system across Wireless applications. Participate in requirements definition and review development and review of process and detail design, preparation of estimates, code development, testing, test support, production support, project leadership and client support. Requires Bachelor in Computer Science plus working or theoretical knowledge of COBOL, DB2, ISPF, JCL, SQL, C/C++. Location: Denver, CO. Working Conditions: M-F 8am-5pm. Salary: $66,100/yr. Reply by resume only to Colorado Department of Labor & Employment, Employment Programs, Attn: Jim Shimada, Tower 2, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117 and refer to job order number CO4682765

Software Engineer. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. product development. Analyze software requirements to determine feasibility of design within time and cost restraints. Consult with clients to define needs or problems. Use of Oracle, Powerbuilder, Windows NT, Visual Basic, C, Sybase, and COBOL. Reqs: Master's in Computer Science, Computer Eng., Physics or related field of study. Plus 3 years in the job offered or 3 years in a related occupation including Consultant, Programmer or Systems Manager. Will accept Bachelor's Degree or equivalent plus five years of progressive experience in the field. $95,000/year, 40hrs/wk, 8AM-5PM. Respond by resume to Colorado Department of Labor & Employment Programs, ATT: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117 and refer to Job Order No. CO 4682746

Software Engineer. Sought by Denver, Colorado consulting company to work in various unanticipated locations throughout the U.S. Research, design and develop computer software including business and marketing applications, in conjunction with hardware product development. Analyze business and financial requirements to determine feasibility of software design within time and cost constraints. Consult with clients to define needs or problems. Use of Oracle, PowerBuilder, PL/SQL, PowerPoint and Visual Basic. Reqs: Masters in Computer Science, Computer Eng., Business Administration, Management Information Systems or related field of study. Plus 2 years in the job offered or 2 years in a related occupation including Programmer Analyst, Business Analyst, or Lead Analyst. $66,058/year, 40hrs/wk, 8AM-5PM. $66,058/year, 40hrs/wk, 8AM-5PM. Respond by resume to Colorado Department of Labor & Employment Programs, ATT: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117 and refer to Job Order No. CO 4682738

careers.com

Software Engineer. Sought by Denver, Colorado consulting company to work in various unanticipated locations throughout the U.S. Research, design and develop computer software systems in conjunction with hardware product development. Analyze software requirements to determine feasibility of software design within time and cost constraints. Consult with hardware engineers and other engineering staff to evaluate interface between hardware and software. Use of HP-UX, Windows 95, HP 9000 Model (E55 Server), Pentium PC, SAP R/3. Reqs: Master's in Computer Science, Computer Eng. or related field of study. Plus 2 years in the job offered or 2 years in a related occupation including Consultant or Engineer. Will accept a Bachelor's Degree and 5 years of progressive experience in lieu of the required education and experience. $66,058/year, 40hrs/wk, 8AM-5PM. Respond by resume to Colorado Department of Labor & Employment Programs, ATT: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117 and refer to Job Order No. CO 4682739

Programmer Analyst (Colorado Springs, CO) - Bachelor's degree or equivalent in Computer Information Systems or Computer Science. Equivalency to a Bachelor degree as determined by a reliable credentials evaluation service based upon education and experience is acceptable. 2 yrs. exp. in the job offered. Analyze user requirements, procedures and problems; Convert project specifications into sequences of detailed instructions and logical steps for encoding into language processable by the computer. Design and develop computer programs; Document computer programs; Perform these duties using C++ and Unix. 40 hr. wk. Salary $58,000.00 per year. Application by resume ONLY to Colorado Department of Labor & Employment, Attn: Jim Shimada, Office of Employment Programs, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, Colorado 80202-2117, and refer to Job Order Number CO4682758. NO PHONE CALLS PLEASE. Must have proof of legal authority to work in the U.S.

Software Engineer. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Research, design and develop computer software systems in conjunction with hardware product development. Analyze software requirements to determine feasibility of design within time and cost constraints. System testing and enhancement; consult with clients to define needs or problems. Use of Visual C++ 6.0, MFC, DLL, Windows NT and SDK programming. Reqs: Master's in Computer Science, Computer Eng. or related field of study. Plus 2 year in the job offered or 2 year in a related occupation including Developer/Programmer and/or Senior Software Engineer. $74,000/year, 40/hrs/wk, 8AM-5PM. Respond by resume to Colorado Department of Labor & Employment Programs, ATT: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117 and refer to Job Order No. CO 4682742

COMPUTER

Systems Integrator with ORACLE & SQL expertise in consulting environment. Contact AG-RecruitSupport, 275 Battery, San Francisco, CA 94111 or visit

www.agconsult.com

Network Engineer
Seek a person with CCIE to work on planning, implementation & optimization of large scale networks design IP/IPX multicast addressing over Frame Relay & ATM networks, managing VOIP network projects & oversee user training & product presentations. Req BS w/2 yrs exp, strong communication skills & ability to work indep. Sal $35.54 per hr, 40 hrs/wk. Job/int: San Ramon. Send resume: HR Dept., PO Box 1426, San Ramon CA 94583 or email: jobs_perm@peakv.net. Must Refer to Job # 1004. No phone calls please.

Programmer Analyst: Oversee the planning, designing, and implementation of new corporate applications or changes in existing applications to support management control and decision-making activities. Major duties and responsibilities include (1) coding and designing business applications, and troubleshooting production problems, (2) defining requirements for new applications or improvements to existing applications, (3) studying information needs for current or planned management functions and analyzing sources of required data, (4) constructing, documenting and presenting methods for making information available, secure and accurate, (5) interfacing with users to solicit their needs and putting ideas into practice, and (6) troubleshooting diverse technical problems. Requirements: Bachelor's or higher degree in Computer Science. 40 hours per week, 8:00a.m. to 5:00 p.m. $47,950 per year. Send resume with Social Security number to Indiana Department of Workforce Development, 10 N Senate Ave., Indianapolis, IN 46204-2277, ATTN: DPG. Refer to ID #8096975.

Consultant (Oracle Manager). Job location: Chicago, IL. Duties: Implement Oracle package soft. & other e-business soft. using Oracle Applications. Perform functional requirement gathering, gap analysis, technical design, solutions design, data mapping, testing, training & post implementation support using PL/SQL, FORMS, Reports and SQL Loader on UNIX platform. Deliver current business baseline, functional requirement & future business process model. Requires M.S. or foreign equiv. in Comp. Sci./Info. Sci. or a closely related field plus 3 yrs exp. in the job offered or 3 yrs exp. as a Consultant. Exp. which may have been obtained concurrently must include 2 yrs exp. using PL/SQL, SQL Loader, Forms and Reports. In lieu of M.S. or foreign equiv. & 3 yrs of exp., will accept a Bachelor's degree or foreign equiv. plus 5 yrs of progressive exp. Send resume to Carmen Strickland, marchFIRST Inc., 311 S. Wacker Dr., Suite 3600, Chicago, IL 60606.

Sr. Consultant (Soft. Engineer). Job location: Chicago, IL. Duties: Design, develop, implement, test, support & maintain comp. soft. & information systems for internet, industrial & automation applications using Visual Basic, Active-X, SQL Server, JavaScript, VBScript & COM on Windows 95/NT platform. Requires: M.S. or foreign equiv. in Engineering, Comp. Sci. or a closely related field plus 2 yrs exp. in the job offered or 2 yrs exp. as a Programmer Analyst. Exp. which may have been obtained concurrently, must include: 1 yr exp. using Visual Basic, Active-X, SQL Server, JavaScript & VB Script on Windows 95/NT platform. Send resume to Carmen Strickland, marchFIRST Inc., 311 S. Wacker Dr., Suite 3600, Chicago, IL 60606.

Database Administrator - Perform database administration using C++ and Visual Basic. Review various database systems such as IBM AS/400, Lotus Notes Server, Cisco Pix Firewall, AT&T Frame Relay and Pentium computers for compatibility. Prepare and revise user manuals and procedures in Japanese. Providing training to employees. M-F, 40 hrs., 7:30-4:30. Overtime - Varies. $31,600/yr. Requirements: Bachelor's Degree in Computer Science or Computer Information Systems. Special Requirements: Must have completed at least one academic course with C++ and Visual Basic. Applicants must show proof of legal authority to work in the U.S. Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 S. State St., 7 North, Chicago, IL 60605. Attn: Lydia Clarke, Ref. #V-IL 24334-E. No calls. An employer paid ad.

Senior Programmer Analyst (multiple openings) - Design, analysis, development, review and test computer programs in IBM mainframe environment using COBOL, VSAM, IMS DB/DC, REXX and JCL. Req's: Bachelor's in Comp. Sci., Systems Analysis, CIS, Comp. Engg., Electrical Engg., Electronic Engg. or Math or its Equiv. in edu. & exp. plus 2 yrs. exp. in job offered. Will accept 3 yrs. of college edu. plus 3 yrs. exp. in the job offered in lieu of the req'd edu. & exp. Will also accept any equally suitable combination of edu., training and/or exp. which would qualify an applicant to perform the duties of the job offered. $55,200/yr., 40 hrs/wk., 8a-5p, M-F. Send resumes to MDCO/ESA, PO Box 11170, Detroit, MI 48211-1170. Ref. No. 200019. Employer Paid Ad.

Hyranks, is a growing an development and consulting company, seeks software engineers who will design, develop, test and implement Client/Server applications. Requires experience in PeopleSoft, Visual Basic, PowerBuilder, Cognos PowerPlay, Oracle, DB2, SQR and Java. 40hrs/wk, M-F 9-5. Resume to: Human Resources, Hyranks Inc, 1931 N. Meacham Rd, Suite 360, Schaumburg, IL 60173.

Software Eng., design/develop systems for business applications, evaluates feasibility of design and systems req., interface software/hardware. Use DB2, COBOL, JCL, CICS on IBM. Req. MBA or Comp. Sci. and 1 yr exp. Send resume to: Michael Weinstein, Systems Tech Group, 1617 Fox Run Dr., Arlington Heights, IL 60004

Professional Consulting Services, Inc. has position openings for Programmer Analysts in Chicago. Must have a minimum of a Bachelor's degree in Computer Science or Computer or Electronics Engineering, a related field, or equivalent. PLease send resume and cover letter to: Mark R. Federman, PCS, Inc. 1415 N. Dayton #3S, Chicago, IL 60622. Please indicate job code #11990 on your cover letter.

JOB

Just point your mouse to the world's best IT careers site.

Brought to you by Computerworld, InfoWorld and Network World.

Find out more. Call your ITcareers Sales Representative or Janis Crowley, 1-800-762-2977

careers.com

Where the best get better

At Razorfish, we provide strategic, creative, and technology solutions to some of the world's most successful digital businesses. We partner with our clients to plan, design, and build products and services that shape the way the world perceives and interacts with your company. We have openings for all levels in the following positions worldwide

TECHNOLOGIST
TECHNICAL DEVELOPER
SOFTWARE DEVELOPER
ASSOCIATE DIRECTOR/OPERATIONS ARCHITECT
FUNCTIONAL/TECHNICAL TEAM LEAD
DESIGNER
TECHNICAL ARCHITECT
PROJECT MANAGER
BUSINESS ANALYST
INFORMATION ARCHITECT
PRODUCER
STRATEGIST

For more information about Razorfish and our career opportunities, please checkout our website: www.razorfish.com. Qualified candidates, please forward your resume to: Razorfish, 101 Main Street, Suite 9, Cambridge, MA 02142, crbarbara@razorfish.com. Equal Opportunity Employer

---

Talent is the fuel of the new economy.

Encore Development
Engineering Positions

Multiple openings for permanent Software Engineers, Software Architects, Data Warehouse Engineers and related positions from entry- to senior-level in Jacksonville, FL, Chicago, IL and Atlanta, GA to design, develop, program and test Web-based business enterprise systems involving TPF, Sales Force Automation, Data Warehousing, Business Metrics, E-commerce, Internet, and others using Object Oriented Programming/Design, relational database modeling, distributed systems, and current web technologies. Particular tools include one or more of: JAVA, JAVAScript, C/C++, VisualB, ASP, ActiveX, UNIX, SQL, Oracle, Windows NT, COBOL, IMS, CICS, DB2, CORBA, COM/DCOM, MS IIS, OLE, CGI, Internet protocols, and others. B.S. in Comp. Sci., Eng'ing, Math or related area. Prior experience and M.S. required for some positions. Competitive salary/bonus/benefits offered. Send resume to: Encore Development, 5210 Belfort Rd., Ste 300, Jacksonville FL 32256, Attn: E. Leonard.

Position: Senior Software Engineer. Qualifications: Must have at least an MS or its equivalent in Computer Science or Computer Engineering. Must have documented proof of 1 year experience as a Senior Software Engineer. In lieu of an MS degree plus 1 year job-offered experience, would also accept a BS + 5 years progressive job-offered experience. Must have proof of legal authority to work in the U.S. Duties: Analysis, design, implementation and testing of applications using object oriented design tools, C, C++, ORBIT and Turbo Pascal. Web-based client server applications development using CGI internet network protocols, IEEE 802 protocols and object oriented-software engineering techniques. GUI development on Windows and UNIX system using X-Windows OSF/Motif. Area of Employment: Colorado Springs, Colorado. Salary: $65,500/yr. 40 hr/wk. Contact: Send resume to Jim Shimada, Colorado Department of Labor and Employment, Tower 2, Suite 400, 1515 Arapahoe Street, Denver CO 80202-2117, refer to Order Number CO4652964.

Professional Consulting Services, Inc. has position openings for Programmer Analysts in Chicago. Must have a minimum of a Bachelor's degree in computer Science or Computer or Electronics Engineering, a related field, or equivalent. Please send resume and cover to: Mark R Federman, PCS, Inc. 1415 N. Dayton #3S, Chicago, Il 60622. Please indicate job code #11949 on your cover letter

---

Applications Engineer

Identification, specification, setup, running and reporting of CFD simulation cases, including development of customer specific tools and software using UNIX scripts and C programming. Must have MS Mech Eng and 4 mos modeling research exp. Job located in Ann Arbor, MI. Respond to: Jackie Truesdale, HR Mgr. Exa Corporation, 450 Bedford Street, Lexington, MA 02420.

Call your ITcareers Sales Representative or Janis Crowley. 1-800-762-2977

United Nations Joint Staff Pension Fund (UNJSPF)
Information Management Systems Section
Computer Information Systems Officer, P-3, New York

The United Nations Joint Staff Pension Fund (UNJSPF) is seeking a professional with demonstrated experience in managing and maintaining its multi-protocol Token-Ring network with wide-area connectivity to the UNJSPF Office in Geneva. He/She will perform network administration, monitor network performance, configure network devices such as controlled access units, communications servers and gateways for host connectivity, configure servers and workstations on the network for print and file services, establish host connectivity for workstations and support server based productivity applications, install and administer network operating systems and upgrade them when necessary, formulate guidelines and recommend security framework including backup and recovery procedures for the network, create user profiles and define access rights for users, schedule and plan to perform daily backups and recovery of data when necessary, configure routers and workstations for electronic mail, groupware applications and faxing, perform administrative functions on groupware servers and clients, upgrade and maintain them; install TCP/IP networking using protocols such as Telnet, FTP and SMTP across IBM and non-IBM platforms, configure TCP/IP workstations for host connectivity and X-server applications, configure WEB server, DNS, proxyserver and firewall to enable Internet and Intranet connectivity, and install various middleware tools to enhance integration, write scripts in C++ and UNIX OS to customize application level functions, identify the APIs in various systems and user exits for possible enhancements. The ideal candidate would have a university degree in computer science, data communication or related experience as well as ten years experience in networking, Help Desk support and programming. CNE/MCSE desirable. Fluency in English required.

Qualified women are encouraged to apply.

The United Nations offers a competitive benefit package. (Please refer to our homepage www.un.org for further information)

Deadline for applications: 13 January 2001. Detailed curriculum vitae including date of birth and nationality should be sent to: VA 00-D-JSP-001466-E-NY, Staffing Support Section, Office of Human Resources Management, Room 2475C, United Nations, New York, NY 10017. Fax No. (212) 963-3134 OR (212) 963-9560. **E-mail Address: Staffing@un.org**

Due to the volume of applications, all internal candidates and only those external candidates under serious consideration will be acknowledged.

TCC USA, Inc., has immediate multiple openings in both their NJ & PA offices for exp'ed IT professionals in the following areas (various skills combination req'd.) SAP R/3 3.1 H, ABAP4, BP mapping, SOP, LTP, MRP, Variant Configuration, TDMA, CDMA 2000, UMTS, WAP, he--, STL, KSH, Genetic Algorithm, Robotics, Visual Age Smalltalk 4.0 with Envy, Visual Works, Smalltalk 2.0 with Envy, Oracle 7.1, VB, Rumbaugh, Rebecca, UML, SQR, UNIX, WEBSERVER, ASP, Java Script, MTS/IIS, ATL COM, ADODB/DAO, SS7 Architecture, ISUP, Nortel DMS-100 switches, Call Processing, PLS, FrameMaker, DMSX, Access Node, PROTEL, EJB, BEA WebLogic Enterprise4.5.1, JavaWebServer2.0, Nortel proprietary, Cold Fusion 4.0, Astra Load Test, IIS Exception Monitor, Craft Interface, Procomm Plus, Net-Commerce, Net Data, Site Test, XML, Hiperstation Tool, J2EE, Holding Pro, Visasoft, SQA Manager, SQA Robot, SQA Test Log Viewer, SQA Comparators, Mercury Interactive, S/390, E-TESTER, SEGUE, DB2PM, Allbase, BMC Toolset, Boole 1 & Babbage Package, Insight, Alpha DS, FPW, VEDIT Plus. Some positions require MS or equiv CS, Engg, Math, Bus Admin, or rel. field while others require BS or equiv as above. Pay commensurate with exp. Foreign equiv of educ. and/or combination of educ/exp will be accepted. Travel/relocation req'd. Resumes & salary expectations to HR, 1845 Watkins Street, Suite #2, Bethlehem, PA 18017 or 485 Georges Rd., Ste 204, Dayton, NJ 08810

CLIENT SUPPORT SPECIALIST Quality Measurement Service Company requires a Client Support Specialist to perform statistical analysis, benchmarking, regression analysis and forecasting on client data, writing and editing technical manuals, test programs for validity of results, accuracy, reliability, and conformity to established standards, trouble shoot and debug any recurring problems in the software applications through recalculations and reconfigurations of application codes to ensure compliance with marked specifications and to ensure customer satisfaction and establish new survey designs, specifications and definitions. Qualified applicants must have a Bachelor's Degree in Computer Science, Statistics, or a related field and two (2) years of work experience in the job offered, a computer technical support position, or related field. The required work experience must include one (1) year of working with statistics, Windows 95, NT, Microsoft Excel, Microsoft Word, FoxPro, and SPSS. Hours: 8:30 AM - 4:30 PM. Salary $45,646/year. Only persons authorized to work permanently in the U.S. need apply. Please forward resume to Jane Hosley, Ref # 1476, Kentucky Department for Employment Services, 275 E. Main St. 2-W, Frankfort, KY 40621. **An equal opportunity employer**

Software Engineer
Design, test, document and update proprietary software applications. 40 hours per week, 8:00 - 5:00 PM Monday through Friday. Requires a BA, BS, or foreign degree equivalent in computer science, engineering, information systems, computer applications, physics or mathematics. Job Site: Chicago, Illinois.

Software Engineer II
Design, test, document and update proprietary software applications. 40 hours per week, 8:00 - 5:00 PM Monday through Friday. Requires a Masters degree, or foreign degree equivalent in computer science, engineering, information systems, computer applications, physics or mathematics. Job Site: Chicago, Illinois.

CONTACT: Linda Green, Director, Human Resources, iManage, Inc., 2121 S. El Camino Real, 4th Floor, San Mateo, CA 94403. email to: Careers@imanage.com or fax 650-356-1125

For High Tech Jobs go to www.dice.com

dice.com
High tech jobs online

For nearly 20 years, Syntel employees across North America, Europe, and Asia have helped build advanced information technology systems for leading Fortune 500 companies and government organizations to improve their efficiency and competitiveness. Today, Syntel professionals are building rewarding careers by providing solutions in e-business, CRM, Web Design and Data Warehousing.

Come discover why Forbes magazine placed Syntel second on its list of "The 200 Best Small Companies in America" and Business Week ranked us #11 on its list of Hot Growth Companies.

Due to our rapid growth, we have immediate, full-time opportunities for both entry-level and experienced Software Engineers, Consultants, Programmers, Programmer/Analysts, Project Leaders, Project Managers, Supervisors, Database Administrators, Computer Personnel Managers and Computer Operations Managers with any of the following skills:

Mainframe
- IMS DB/DC or DB2, MVS/ESA, COBOL, CICS
- Focus, IDMS or SAS

DBA
- ORACLE or SYBASE
- DB2

Client-Server/WEB
- Siebel
- Websphere
- Com/DCom
- Web Architects
- Datawarehousing
- Informix, C or UNIX
- Oracle Developer or Designer 2000
- JAVA, HTML, Active X
- Web Commerce
- SAP/R3, ABAP/4 or FICO or MM & SD
- Oracle Applications & Tools
- Lotus Notes Developer
- UNIX System Administrator
- UNIX, C, C++, Visual C++, CORBA, OOD or OOPS
- WinNT
- Sybase, Access or SQL server
- PeopleSoft
- Visual Basic, PowerBuilder
- IEF

Technical Recruiters
- Junior and Senior positions available

Some positions require a Bachelor's degree, others a Master's degree. We also except the equivalent of the degree in education and experience.

With Syntel (NASDAQ: SYNT), you'll enjoy excellent compensation, full benefits, employee stock purchase plan and more. Please forward your resume and salary requirements to: **Syntel, Inc., Attn: Recruiting Manager-LOK, 2800 Livernois Rd., Suite 400, Troy, MI 48083. Phone: 248-619-2800; Fax: 248-619-2888.** Equal Opportunity Employer

SYNTEL
www.syntelinc.com

NET2S

NET2S is a leading International Consulting and Engineering firm specializing in networking and communications technologies. As an industry leader we seek to provide our Global 500 clientele with creative people who implement innovative technological solutions. Our goal is to offer unparalleled Professional Services on mission critical systems and networks. We are capable of facilitating all phases of the systems and engineering life cycle: Planning, Architecture and Design, Deployment and Integration as well as Technical Operations.

Presently we are seeking qualified networking and systems engineers to our team. If you possess skills in the following areas please apply:

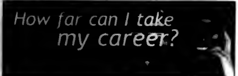
- Network Engineers (Cisco, Nortel)
- Unix Administrator
- TIBCO Engineer
- Network Security Specialist
- Telecom Engineer
- Software Developers

All positions require BS/MS degree with a minimum of 2 to 3 years of experience in the field. Must possess excellent communication skills as well.

NET2S offers a competitive salary, with an excellent benefits package including medical, dental and 401(k). Relocation assistance may be provided. For immediate consideration, please send your resume to NET2S, 1 West 34th Street, Suite 302, New York, NY 10001. Fax (212) 279-1960. Phone (212) 279-6565 or Email: jobs-ny@net2s.com

We are an equal opportunity employer

CW0011276 1



As a $250 million industry leader, we are able to provide our people with the kind of work environment, opportunities, benefits, growth potential and progressive training others can't match. It's time to become more than just an employee, become a partner. We are looking for IT professionals with a minimum of 1+ years experience, for the following job titles:

- **PROGRAMMER/ANALYST**
- **SYSTEMS ANALYST**
- **SYSTEMS PROGRAMMER**
- **PROJECT MANAGER**
- **DATABASE ADMINISTRATOR**
- **DATABASE ANALYST**
- **LAN ADMINISTRATOR**
- **TESTING/QA ANALYST**
- **WEB DEVELOPER**
- **SALES EXECUTIVE**

Our skill sets include:

- **CLIENT/SERVER**
- **ERP - SAP, PEOPLESOFT**
- **INTERNET**
- **E-COMMERCE**
- **MAINFRAME**
- **MID-RANGE, AS/400**

Contact the Corporate Headquarters for positions available at the following offices: Boston, MA; Hartford, CT; Tarrytown, NY; New York, NY; Iselin, NJ; Philadelphia, PA; Falls Church, VA; Raleigh, NC; Charlotte, NC; Boca Raton, FL; Orlando, FL; Jacksonville, FL; Atlanta, GA; Chicago, IL; Phoenix, AZ; Denver, CO; Houston, TX; Dallas, TX; Austin, TX; Irvine, CA.

For consideration, please send your resume to: **RCG Information Technology; Attn: National Recruiting, 379 Thornall Street, Edison, NJ 08837; FAX: (732) 744-3583** or **Email to: recruit@rcgit.com** An Equal Opportunity Employer M/F/D/V

RCG INFORMATION TECHNOLOGY
www.rcgit.com

Oracle Applications Sr Consultant Duties Design, implement, integrate & set-up Oracle applications software & client/server & web based solutions using Oracle financial & mfg software. Analyze, design & develop customizations, reports, interfaces with prod systems & conversions from legacy systems using Oracle RDBMS, Oracle Developer 2000 & PL SQL. Administer & upgrade Oracle database server & Oracle web server. Perform system admin. of Oracle application system software. Analyze software & map business requirements into application functions using system analysis & modeling techniques. Requires M S in Comp or Info Sci Eng or related field & 3 yrs exp in the job offered or 3 yrs exp as a Consultant, Prog/Analyst, Software Eng or Programmer. Will accept B S (or foreign equiv) & 5 yrs of progressive exp in the comp ind in lieu of M S & 3 yrs exp. Exp which may have been obtained concurrently must incl. 3 yrs exp designing & implementing Oracle applications software & 3 yrs exp administering & upgrading Oracle database server. EOE. 40 hrs. wk. 8 00 a m to 5 00 p m. Salary $82 000/yr. Send resume (no calls) to Diane Tuccio, AnswerThink, Inc. 817 W Peachtree St. Suite 800. Atlanta, GA 30308. Must have legal auth. to work in U.S.

BUSINESS SOFTWARE ANALYST
Business Software Analyst to study, review and analyze business processes to determine feasibility of implementation of SAP R3 ERP computer software. Confer with personnel of all functional business units to analyze current operating procedures and prepare business processes for all functions of business operations including financial management, accounts payable and receivable, inventory, order entry, payroll, benefits, etc. Conduct fit gap analysis to determine if existing business operations can be mapped into SAP or if customizations to SAP R3 are required to conform existing operations. Design changes to existing business systems to conform to SAP R3 or customize SAP R3 to conform to existing systems. Also responsible for datamapping, data conversion, testing and building and reviewing prototypes. Requirements: Bachelor's Degree or equivalent in Business Admin, Accounting or related field and five years experience in Accounting, finance or other management or support position. knowledge of SAP R3 Enterprises Resource Planning Software. Salary $156 000/year. Working Conditions 8 00 A M to 5 00 PM. 40 hours/week, involves extensive travel and frequent relocation. Apply Ms Sue Notarnicola, Fayette County Team PA CareerLink 32 Iowa Street Uniontown PA 15401 3513, Job No WEB138076

Software Engineers and Other Information Technology Professionals

Employee-owned Science Applications International Corporation (SAIC), a Fortune 500 company, provides high-technology services and products to government and commercial customers. **SAIC** and its subsidiaries have estimated annual revenues of over $5.5 billion and more than 41,000 employees at offices in over 150 cities worldwide.

Currently, we have multiple openings at various U.S. locations for SOFTWARE ENGINEERS AND OTHER INFORMATION TECHNOLOGY PROFESSIONALS.

SAIC offers a competitive salary and comprehensive benefits package. Qualified applicants please forward your resume and salary requirements to: **SAIC, Human Resources, REF: PT, 1450 Poydras Street, Suite 670, New Orleans, LA 70112; Fax: (800) 630-3662.** We are an Affirmative Action Employer who values cultural diversity in the workplace.

SAIC

More information about SAIC is available on the Internet at:

www.saic.com

Software Engineer to design and develop Enterprise Systems and Database Applications for POS industry using software engineering techniques and object oriented design. At least 18 months exp. in VB, XML, Java, POS, VBScript, COM, ASP, SQL Sever & 3 yrs exp in C++ is reqd. Mentor for junior level developers. M.S. or equivalent in Computer Sc. Travel reqd. Submit resume and salary reqmnts to Director HR, Compris Technologies Inc. 1000 Cobb Place Blvd. Kennesaw GA 30144

IT firm looking for individuals with the following skills to fill positions from coast to coast.

Java, Web Dev, Java Script, ORACLE, VB, C, C++
SAP Curriculum Dev./Training Tech. Proposal Generation, Delano Dev

Systems Analyst, Programmer Analyst/IT Training Coordinator
Please send resume to
Interactive Business Systems Inc.
2825 Butterfield Road, Suite 114W
Oakbrook, IL 60523
Attn Michelle Beaumont

Applications Development Team Leader: Designs and develops new imaging applications for the company's product line of medical diagnostic imaging equipment. Participates in and leads image acquisition software development and maintenance. Works with data acquisition algorithms, signal and data processing algorithms, visualization and analysis operations and user interface needs. Allocates resources and manages schedules for on-time delivery of applications and timely closure of field generated problem reports. Works with marketing and the field to ensure customer satisfaction in the final product. Required is a Master of Science in Biomedical Engineering, Computer Science, Electrical Engineering, or Physics and one (1) year of experience in the position being offered (i.e., Applications Development Team Leader) OR one (1) year of experience as a Graduate Research Assistant or Engineer. As part of the required experience in the position being offered or in the related occupation, the applicant must have had programming experience in the C and EPIC programming languages, experience with image reconstruction, signal processing and image quality analysis, experience in Structure and Object Oriented Analysis and Design, experience in software development in the UNIX (e.g., SGI) environment and experience interacting with field engineers to resolve customer issues. Monday through Friday, 8:00 am to 5:00 pm, 40 hours per week, $85,000 annually. Qualified applicants may submit two (2) copies of resume and cover letter to: Cher Phoutavan, File #C101784, DWE-ALC, PO Box 7972, Madison, Wisconsin 53707-7972. Reference File #C101784

DATABASE ADMINISTRATOR Develops data model of data base, creates data base schema, designs logical and physical data base using Oracle and Informix in Unix, Solaris, HPUX, AIX, IRIX and Windows NT environments, designs data base to interface with Tuxedo middle wares in three tier client/server environment, implements physical data base, coordinates and carries out physical changes to data bases, carries out data base backup, tunes data base and system to improve data base performance for online transaction processing (OLTP) and online analytical processing (OLAP) applications, manages data base accesses by using privileges and roles, directs and trains programmers and analysts to make changes to data base management system, reviews and corrects programs. 40hrs/wk. M.S. in Computer Science 3 yrs. exp. in job offered or 3 yrs. related exp. in Data base design and/or administration – (Unix environments). Salary Range $60,000-$90,000/yr. Apply at the Texas Workforce Commission, Houston, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O. #TX1027516. Ad paid by An Equal Opportunity Employer

---

HP Unix Support Analyst (multiple openings) Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation using HP Unix. Work requires extensive travel and frequent relocation. Must have one year of experience using HP Unix as follows: 1 of A and 1 of B or 2 of A, or 2 of S. A) RS/6000(S-70, R-50, F50, J40, R40, R20, 99K, 520H, 340H, 320H, 43P140/240, C-10), Sun Sparc, Sun Ultra, SUN Enterprise(220R, 250R, E3000, E3500, E4000, E5000, E7000, E10000), HP 9000(K-Series, D Series). B) Logical Volume Manager, IBM RAID, SSA, TCP/IP, SUN CLUSTER, HIGH Availability, SUN RAID, Veritas Volume Manager, NIS, NIS+, NFS, MC Service Guard, HP Overview. A Bachelor's degree in one of several limited fields: computer science/applications, engineering, chemistry, mathematics, physics or a scientific or business related field. Salary at $70,000.00 per year. 40 hrs/wk. 9:00-5:00 p.m. Please submit resumes to Mr. Anthony Gebicki, Manager, Westmoreland County Careerlink, 300 East Hills Street, Youngwood, PA 15697-1808. Reference Job Order No. WEB 138217

Software Developer: 40 Hrs./Wk. no overtime 9a.m. to 5p.m. $42,300 annually. Duties include software development and feature testing on Remote Access Interface Unit, utilizing the UNIX system via the Sunwork station and c language. B.S. in Computer Science and University level courses in C UNIX required. Aurora, Illinois area. Applicants must show proof of legal authority to work in the U.S. Send resumes to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY 401 South State Street-7 North, Chicago, IL 60605. Attention Leonard Boksa. Reference # V IL 23676-B AN EMPLOYER PAID AD. NO CALLS. SEND 2 COPIES OF BOTH RESUME & COVER LETTER

PROGRAMMER/ANALYST to analyze, design, develop, test, implement, maintain and support GUI based application software and databases for business and management applications in a client server environment using object-oriented programming, Visual Basic, C, C++, Visual Java, Omnimark, Rogue Wave, Sybase, Access and MS SQL under Windows 95/NT and UNIX platforms. Require B.S. in Computer Science, Engineering discipline, or a closely related field with two years of experience in the job offered or as a Programmer. Extensive travel on assignment to various client sites within the U.S. is required. Salary $65,000 per year, 8 am to 5 pm, M-F. Send resume to Oklahoma Employment Security Commission, 11654-A E. 21st, Tulsa, OK 74129 (ID#7209) Attn: Job Order # 436148

COMPUTER

NOVASOFT INFORMATION TECHNOLOGY CORP & ENOVASOFT INCORPORATED Software consulting firm and web development company is seeking qualified professionals (bachelors degree +) for the following nationwide positions:

Members of Technical Staff (Analysts, Programmers, Systems Analysts, etc.)
•Web Developers (Java, ASP, Coldfusion)
•Web Masters
•ERP/CRM Professionals (Siebel, SAP, BAAN)
•Client Server (Oracle, C, C++, VC++, VB) Administrators
•Systems Administrators (UNIX, Sun, Solaris, HP-UX, AIX, Windows NT, Cisco)
•DBA's (Oracle, Sybase, SQL Server) Corporate Staff
•Technical Recruiters/Data Process Professionals
•Sales/Account Executives
•HR Professionals

Excellent salary and benefits package available.
Fax or e-mail resumes to:
HR Department
NovaSoft Info Tech. Corp. or eNovaSoft Inc
Fax: 609-586-5677
E-mail: NovaSoft: resumes@novasoftinfo.com
eNovaSoft: info@enovasoft.com

SOFTWARE ENGINEERS, CONSULTANTS, PROGAMMERS, PROGRAMMER ANALYSTS, PROJECT LEADERS

Due to our rapid growth, we have immediate Full-Time opportunities for both entry level and experienced individuals with any of the following skills: **MAINFRAME** •MS OS/DC DB2 CICS COBOL MVS/ESA VSAM JCL TSO ISPF •Focus IDMS SAS •Telon Natural Adabas & REXX **MIDRANGE** •AS400 RPG 400 Synon & COBOL COBOL 400 **DBA** •Oracle Sybase DB2 & IMS **CLIENT SERVER** •Informix C Unix C C++ Visual C++ •CORBA OOD or OOPS LAN/WAN •Novell or WinNT Sybase Access Power Builder SQL Server Visual Basic •IEF JAVA HTML Active X or Web Commerce XML XSL WAP E/R •Oracle Developer/Designer 2000 •Oracle Applications & Tools •Unix system Administrator •Lotus Notes Developer •SAP/R3 ABAP 4 and/or modules •PeopleSoft Baan. Bachelor's or Master's degree required depending on position. We also accept equivalent in education and experience. Please forward your resume and salary requirements to:

Attn: Recruiter
Wizard Business Systems, Inc.
2020 S. Mill Ave., #112A, Tempe, AZ 85282.
Ph: 480-731-6025,
Fax: 480-731-3061
E-mail: recruiter@wizardbusiness.com
An Equal Opportunity Employer

R S Software is a leading, globally positioned company with software development facilities in the US and India. R S Software has ongoing opportunities across the USA for experienced software professionals.

SOFTWARE PROFESSIONALS:
JAVA, JAV Scripts, JAVA Servlet, ASP, CORBA, HTML
DBA Oracle, SQL Server, DB2
VC++, C++, MFC, COM/DCOM, OOD, MS SNA Server
Unix, C/C++, OOA, OOD
COBOL, CICS, DB2
Systems Administrators: Unix, Solaris, AIX, Windows NT
Security and Firewalls Administrators
Oracle 8i Developer 2000/Designer 2000, C/Pro*C, Unix/Windows NT
MS SQL Server, Visual Basic 6.0, Visual InterDev
IEF/COOLGEN
TPF
Peoplesoft HR & Payroll modules

Also need:
HUMAN RESOURCES
Executive-Personnel Manager
Generalist/Recruiter
TECHNICAL SALES SUPPORT MANAGER

For a challenge, and competitive compensation,
Please FAX CV to: 408-382-0083
Attn: RST 101
RS Software (India) Ltd.
1900 McCarthy Blvd. # 103
Milpitas, CA 95035

Programmer Analyst: Design, develop and maintain software applications using Object Oriented Programming languages. Review requirement and functional specifications and produce Test plans. Participate in detailed Unit, Integration, Scalability and Regression testing of the application. Develop test scripts using QA automation tools. Demonstrated ability designing and developing applications using Visual Basic, Java, HTML. Demonstrated ability working with Windows NT and Oracle. Demonstrated ability developing test scripts using automation tools such as SilkTest. $54,882/yr. 40/hr/wk. 9 a.m. - 5 p.m. Must have 2 yrs. exp. and B.S. in Comp. Sci., Eng. rel. field/equiv. Send 2 resumes. Case #20003503. Labor Exchange Office, 19 Staniford Street, 1st fl., Boston, MA 02114.

COMPUTER
** CALIFORNIA **

- Web Architects/Programmers Java/Servlets/EJB, C++/UNIX
- Out-sourcing Delivery Mgrs. & Architects
- Healthcare Professionals:
  - Project & Product Managers
  - QA Engineers

Email: resumes@tlir.com

SAIC

WWW.SAIC.COM

SOFTWARE ENGINEER
Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in DB2, CICS, Expeditor and VS COBOL. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and five years of experience as a software engineer or computer programmer; knowledge of DB2, CICS, Expeditor and VS COBOL. Salary $66,400/year. Working Conditions 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. James Mackin, Beaver Falls Job Center/TPCL, 2103 Ninth Ave., Beaver Falls, PA 15010-3957. Job No. WEB138369

Software Engineer to develop database driven web applications. Responsibilities include but not limited to database design and implementation, stored procedures, web application development. Applicants with Master's in C.S./C.I.S. plus at least 1 year database and web application development experience. Required skill: MSSQL Server, Transact-SQL, ASP, HTML, Visual Basic, VBScript, Javascript, Java. Full-time position based in Ft. Lauderdale, Florida. M-F. Good salary, send resumes only to Prashant Cheerukuri, Technion Communications Corporation, 5831 NW 88th Avenue, Tamarac, Florida 33321

Senior Level Programmer/Analyst: Lead development team in planning, scheduling, & developing custom software applications. Includes all development phases: business analysis, systems analysis, programming, testing, implementation, conversions, support & documentation. Assist in training & development of programmer/analysts. Master's Degree in Computer Science or related field or Bachelor's Degree plus five years of software development experience required. Experience or training in world wide web programming technologies such as Netscape Enterprise Server, Visual Age, Java Script, HTML, Adobe Photoshop, Acrobat, etc. required.

AD INDEX

SALES OFFICES

Computerworld Headquarters,
500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
Phone: (508) 879-0700, Fax: (508) 875-4394

President/CEO/Publisher
Joseph L. Levy

Senior Vice President/Associate Publisher
Sherry Driscoll-Coleman

Vice President/Customer Solutions
Elaine R. Offenbach

Vice President/Key Accounts
Linda Holbrook

NORTHEAST

ACCOUNT DIRECTORS: Laurie Mannione, Paul Reiss. **SALES OPERATIONS MANAGER:** Leslie Murray. **SALES ASSOCIATES:** Deborah Cummings, Samantha Monette, 500 Old Connecticut Path, Framingham, MA 01701 (508) 879-0700 Fax (508) 270-3882

SOUTHEAST

ACCOUNT DIRECTOR: Lisa Lizdle Wallace, 5242 River Park Villas Dr., St. Augustine, FL 32092, (800) 779-5622 Fax (800) 779-9622. **SALES ASSOCIATE:** Peter Coen, 500 Old Connecticut Path, Framingham, MA 01701 (508) 879-0700 Fax (508) 270-3882

METRO NEW YORK

ACCOUNT DIRECTORS: Fred LoSapio, John Besse. **FIELD MARKETING EXECUTIVE:** Maureen Grady. **SALES & OFFICE ASSOCIATE:** Susan Nunnic. **SALES ASSOCIATE:** John Radzinski, Mack Cali IV, 61 South Paramus Rd, 3rd Floor, Paramus, NJ 07652 (201) 587-0090 Fax (201) 587-9255, (201) 587-1299

NORTHWEST

SENIOR ACCOUNT DIRECTOR: John Canavan. **ACCOUNT DIRECTOR:** Kevin Ebmeyer. **SALES OPERATIONS MANAGER:** Emmie Hung. **SALES ASSOCIATES:** Camilla Dessing, Chris Kallin, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax (650) 524-7000. **FIELD MARKETING EXECUTIVE:** Jill Colley, 10900 N.E. 8th Street, Suite 820, Bellevue, WA 98004 (425) 451-0293 Fax (425) 451-3822

CENTRAL STATES

REGIONAL VICE PRESIDENT: Blayne Long. **ACCOUNT DIRECTOR:** Tom Buckley. **FIELD MARKETING EXECUTIVE:** Janet Anderson. **SALES ASSOCIATE:** Cathy Voss, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Fax (847) 827-0690

BAY AREA

ACCOUNT DIRECTORS: Debbie Sonch, Kelly Mahoney, Michelle Yates. **SALES ASSOCIATES:** Amital Ermias, Rana Farhat, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax (650) 524-7000

SOUTHERN CALIFORNIA

FIELD MARKETING EXECUTIVE: Navid Daveni. **SENIOR SALES ASSOCIATE:** Jean Dellarobba, 18831 Von Karman Avenue, Suite 200, Irvine, CA 92612 (949) 250-3942 Fax (949) 476-8724

ADVERTISING OPERATIONS

PRINT DISPLAY ADVERTISING: Paula Karavan, (508) 620-7747 Fax (508) 879-0446. **ONLINE ADVERTISING:** Maureen Roberts (508) 271-8007 Fax (508) 875-6310

COMPUTERWORLD

PRODUCTION: Production Manager/Beverly Wolff. **DISTRIBUTION:** Distribution Manager/ Bob Wescott. **AUDIENCE AND MARKET RESEARCH:** Director/Joanne Otten, Research Analysts/Seanna Maguire, Candace O'Keefe

ENTERPRISE BUSINESS SOLUTIONS

BOSTON: Director Strategic Initiatives/Lee Leger, Sales Operations Manager/Maria McGrath, Event Operations Manager/Faith Pasternak, Event Program Manager/Michael Melendy, Conference Manager/Ann-Marie Trabandis, Senior Graphics Production Coordinator/Heidi Broadley, Editor/Stefanie McCann, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 Fax (508) 875-6310

ONLINE ADVERTISING

Sales Manager/Gregg Pinsky (508) 271-8013, Account Executive/Matt Duffy (508) 620-8145, Sales Operations Manager/Maureen Roberts (508) 271-8007, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 Fax (508) 875-6310

IT CAREERS ADVERTISING SALES OFFICES

Vice President-General Manager/Janis Crowley, Marketing Director/Kelli Flanagan, Marketing Specialist/Hawa Tarakatsubo, Sales Marketing Specialist/Chantelle Finney, Operations Manager/Donna Kent, Advertising Coordinators/Liliana Lopez, Carla Amaral, 155 Bovet Road, Suite 101, San Mateo, CA 94402 (800) 762-2977 Fax (650) 286-2770. **EAST:** Regional Manager/ Deanna Holzer (212) 828-6691, Senior Account Manager/Nancy Mack, 500 Old Connecticut Path, Framingham, MA 01701-9171 (888) 568-5056 Fax (650) 286-2770. **MIDWEST:** Regional Manager/Laura Wilkinson, (773) 248-4301, Account Manager/Donna Dalgo, (312) 587-1390, Sales Associate/Rochelle Caravaca (650) 312-0542, 155 Bovet Road, Suite 101, San Mateo, CA 94402 (800) 762-2977 Fax (650) 286-2770. **WEST:** Regional Manager/ Andrea Denny, Account Manager/Whitney Nagy, 155 Bovet Road, Suite 101, San Mateo, CA 94402, (800) 762-2977 Fax (650) 286-2770

LIST RENTAL - POSTAL: Rich Green, (508) 370-0832, e-mail: rich_green@idg.com. **LIST RENTAL - E-MAIL:** Christine Cahill, (508) 370-0808 e-mail: christine_cahill@idg.com. **MAILING ADDRESS:** IDG List Services, P.O. Box 9151, Framingham, MA 01701-9151, FAX (508) 370-0020

COMPUTERWORLD

President/CEO/Publisher
Joseph L. Levy

Chief of Staff
Laureen Austermann
(508) 820-8522

Vice President/CIO
Rick Broughton
(508) 620-7700

Vice President/Marketing
Derek Hulitzky
(508) 620-7705

Vice President/Editor in Chief
Maryfran Johnson
(508) 620-7724

Vice President/ Manufacturing Operations
Carolyn Medeiros
(508) 620-7733

Vice President/General Manager Enterprise Business Solutions
Ronald L. Milton
(508) 820-8661

Vice President/ Strategic Circulation Operations
Eric Schmierer
(508) 820-8217

Executive Vice President
Matthew C. Smith
(508) 820-8102

INTERNATIONAL DATA GROUP

CHAIRMAN OF THE BOARD: *Patrick J. McGovern* **PRESIDENT/CEO:** *Kelly Conlin*

IDG

Computerworld is a publication of International Data Group, which reaches more people worldwide about information technology than any other company in the world. With annual revenues of $2.35 billion, IDG is the leading global provider of IT media, research, conferences and expositions. IDG publishes more than 290 computer newspapers and magazines and 700 book titles in 75 countries, led by Computerworld/Infoworld, Macworld, Network World, PC World, Channel World, and the "...For Dummies" global product lines. IDG offers online users the largest network of technology sites around the world through IDG.net (http://www.idg.net) which comprises more than 225 targeted web sites in 55 countries. IDG is also a leading producer of Web computer related expositions in 35 countries and its research arm, International Data Corporation (IDC) provides computer industry research and analysis through 49 offices in 41 countries worldwide. Company information is posted at http://www.idg.com

ADVERTISERS INDEX

ACS Financial 67
ASPECT www.aspect.com 53
Attunity www.attunity.com 38
Authentica www.authentica.com 11
BEA www.bea.com 25
BellSouth www.bellsouth.com 15
Brocade www.brocade.com 55
Cisco www.cisco.com 22-23
Computer Associates www.cai.com 2-3
Digex www.digex.com 71
The eProcess Edge www.osborne.com 85
EDS www.eds.com 77
Hewlett-Packard www.hp.com 61, 63
HireAbility.com www.hireability.com 59
IBM Cross Server www.ibm.com 26-27
IBM Global Services www.ibm.com 48-49
Imation www.imation.com 29
Intel www.intel.com 31
Intranet Solutions www.intranetsolutions.com 64
ITProfiler.com www.itprofiler.com 79
ITWorld.com www.itworld.com 57
Legato www.legato.com 34
Liebert www.am.liebert.com 21
Network Engines www.networkengines.com 75
Nortel Networks www.nortelnetworks.com C3
Oracle Corp. www.oracle.com 73
PACE/BUTLER Corp. www.pace-butler.com 66
Powerware www.powerware.com 13
Qwest www.qwest.com 36-37
SAGA Software www.sagasoftware.com 45
SAP www.sap.com 43
SAS www.sas.com 54, 68-69
Sitara Networks www.sitaranetworks.com 17
Sprint www.sprint.com 51
Software Diversified Services www.sdsusa.com 66
Syncsort www.syncsort.com 4
3COM www.3com.com 9
Unisys www.unisys.com (800) 874-8647 X100 ..... C4
Windows 2000 Advantage www.Windows2000Advantage.com 18-19
WorldStor www.worldstor.com 28

*Regional Select Edition

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction and we want to do it fast. Please write to:

Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label including the coded line.

Your New Address Goes Here: **Address shown:** ❑ Home ❑ Business

NAME

COMPANY

ADDRESS

CITY STATE ZIP

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: **1-800-552-4431**

Outside U.S. call (740) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list, please write to the following address: - COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701

NAME
TITLE
COMPANY
ADDRESS
CITY
STATE
ZIP

How to Contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is **www.computerworld.com.** All staff members can be reached via e-mail using the form: **firstname_lastname@computerworld.com.**

All IDG News Service correspondents can be reached using the form: **firstname_lastname@idg.com.**

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: **letters@computerworld.com.** *Include your address and telephone number.*

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Subscription rates: U.S., $58/year; Canada, $110/year; Central and South America, $250/year; all others, $295/year

Phone (800) 552-4431
E-mail circulation@computerworld.com
Back Issues (508) 820-8167

REPRINTS/PERMISSIONS

Phone Ray Trynovich (717) 399-1900, ext. 124
E-mail rtry@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Maryfran Johnson (508) 820-8179
Editorial Director, Print/Online Patricia Keefe (508) 820-8183

DEPARTMENT EDITORS

News Editor Anne McCrory (508) 820-8205
Features Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Don Tennant (508) 620-7714
Assistant Business Editor Melissa Solomon (508) 620-7754
Assistant Technology Editor Tommy Peterson (508) 620-7729
Washington Bureau Chief Mitch Betts (202) 347-6718
West Coast Bureau Chief Pimm Fox (650) 524-7116
West Coast Editor Mark Hall (503) 391-1158

REPORTERS

Mobile computing/wireless Bob Brewin (301) 277-8069
Internetworking, telecom/wireless, defense and aerospace James Cope (219) 273-5369
Application development, Java, automotive Lee Copeland (773) 394-0402
Careers, labor issues, outsourcing, application service providers, health care Julekha Dash (804) 295-9512
General assignment, e-mail, groupware Jennifer DiSabatino (508) 820-8122
Business-to-business e-commerce Julia King (610) 532-7599
Network, systems management, food, retail and restaurant Sami Lais (301) 270-1427
General assignment, travel Michael Meehan (508) 620-7704
General assignment, storage Lucas Mearian (508) 820-8215
Microsoft operating systems and BackOffice, retailers Carol Sliwa (508) 628-4731
Enterprise resource planning, customer relationship management and supply-chain software; Novell Marc L. Songini (508) 820-8182
General assignment, Intel servers, transportation/carriers Linda Rosencrance (508) 628-4734
State/federal government, antitrust, legal issues, politics Patrick Thibodeau (202) 333-2448
IT management, financial services Maria Trombly (413) 323-0842
B2C e-commerce and technologies, databases, data mining, Web infrastructure Dan Verton (703) 321-2277
Large systems/high-end Web server technology, security, heavy manufacturing Jaikumar Vijayan (508) 820-8220
General assignment, Linux and Unix operating systems Todd Weiss (717) 560-5255

OPINIONS

Senior News Columnist Frank Hayes (503) 252-0100
Columns Editor Rick Saia (508) 820-8118

FEATURE EDITORS

Special Projects Editor Ellen Fanning (508) 820-8204
Business Features Editor Thomas Hoffman (845) 988-9630
Reviews Russell Kay (508) 820-8175
Technology Evaluations Editor Robert L. Mitchell (508) 820-8177
IT Management Rick Saia (508) 820-8118
IT Careers David B. Weldon (508) 820-8166

FEATURE WRITERS

Gary H. Anthes (202) 347-0134
Matt Hamblen (508) 820-8567
Kathleen Melymuka (508) 628-4931
Kim S. Nash (773) 275-4133
Mathew Schwartz (508) 820-8285
Deborah Radcliff (707) 829-5823

RESEARCH

Mari Keefe, **research manager;** Lisa Sydney, **online researcher;** Allison Wright, **research associate;** Jennifer McBride, **research intern**

COPY DESK

Jamie Eckle, **managing editor/production** (508) 820-8202
Jean Consilvio, **assistant managing editor/production.**
Michele Lee, Bob Rawson, **senior copy editors;** Jacqueline Day, Eugene Demaitre, Linda Frank, Mike Parent, **copy editors**

GRAPHIC DESIGN

Stephanie Faucher, **design director** (508) 820-8235
Mitchell J. Hayes, **art director;** April O'Connor, **associate art director**
Julie D'Errico, Michael Knapp, **graphic designers;**
Jay Park, **editorial graphics coordinator;**
Rich Tennant, John Klossner, **cartoonists**

ADMINISTRATIVE SUPPORT

Linda Gorgone, **office manager** (ext. 8176);
Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139);
Gussie Wilson (650) 524-7035, **editorial assistants**

COMPUTERWORLD ONLINE

Tom Monahan, **director, online and design** (508) 820-8218
Sharon Machlis, **managing editor/online** (508) 820-8231
Craig Stedman, **online news editor** (508) 820-8120
Marian Prokop, **online news editor** (508) 620-7717; Vanessa DiMauro, **communities director** (508) 820-8110; Brian Sullivan, **communities page editor** (508) 620-7780; John R. Brillon, David Waugh, **associate art directors;** Peter Smith, **Web development manager;** David Ramel, **online production coordinator and e-mail newsletter editor;** William Rigby, **online services manager;** Paul Krasnoo, Matthew Moring, **graphic designers**

CONTRIBUTING COLUMNISTS

Allan E. Alter, Joe Auer, Jim Champy, John Gantz, Dan Gillmor, Peter G.W. Keen, Bill Laberis, David Moschella, Fran Quittel, Paul A. Strassmann, Don Tapscott, Ed Yourdon

CONTRIBUTING WRITERS

Leslie Goff, Amy Helen Johnson

COMPANIES IN THIS ISSUE

Page number refers to page on which story begins. Company names can also be searched at **www.computerworld.com**

24/7 MEDIA INC	14
[illegible]	64
[illegible]	42
ABN AMRO INC	7
ACTIVMEDIA RESEARCH LLC	7
ADAC LABORATORIES INC	20
[illegible] LTD	87
AETHER SYSTEMS INC	46
AETNA INC	24
AGENCY.COM LTD	88
AGILENT TECHNOLOGIES INC	30
ALCATEL	88
ALLEGHENY ENERGY INC	80
[illegible]	52
AMAZON.COM INC	67
AMC ENTERTAINMENT INC	15
AMEREN CORP	40
AMERICA ONLINE INC	14,30,52,80
AMERICAN AIRLINES INC	40
[illegible] SEATING SYSTEMS	1
AMR RESEARCH INC	7,30,38
[illegible]	80
APPLE COMPUTER INC	88
ASSOCIATED BANC CORP	12
AT&T WIRELESS GROUP	6
AUTODESK INC	54
AUTOMATIC DATA PROCESSING INC	54
[illegible] INTERNATIONAL	14
BOISE CASCADE CORP	67
BOO.COM	50
BP AMOCO PLC	42
BRISTOL-MYERS SQUIBB CO	40
BROADLANE INC	12
BUZZSAW.COM INC	54
CABLE AND WIRELESS PLC	68
[illegible] CONSULTING GROUP INC	60
CALIFORNIA INTERNET VOTING TASK FORCE	9
CAP GEMINI ERNST & YOUNG	12
CARDINAL HEALTH INC	40
CAROLINA HURRICANES	10
CAUCUS: THE ASSOCIATION OF HIGH TECH ACQUISITION PROFESSIONALS	40
[illegible] INC	1
CERTICOM CORP	40
CHARLES SCHWAB & CO	46
CHICAGO WOMEN IN TECHNOLOGY	54
CISCO SYSTEMS INC	80,76
CITIGROUP INC	40,87
CLARITY PARTNERS LLP	64
CMS ENERGY CORP	12
[illegible] NETWORKING INC	64
COLLEGECLUB.COM INC	40
COLUMBIA UNIVERSITY	30,54
COMAIR INC	87
COMMERCE ONE INC	52
COMPAQ COMPUTER CORP	[illegible]
COMPUTER SCIENCES CORP	6
COMPUTER SECURITY INSTITUTE	24
CONCENTRIC NETWORK CORP	54
DAIMLERCHRYSLER AG	67
DATA WAREHOUSING INSTITUTE	6
DELL COMPUTER CORP	54
DEUTSCHE LUFTHANSA AG	6
DOLBY LABORATORIES INC	12
DOUBLECLICK INC	62
DRAGON SYSTEMS INC	72
[illegible] CORP	40
EARTHLINK INC	12
EASTMAN CHEMICAL CO	80
EBAY INC	1
EMC CORP	60
[illegible] INC	12
EPHYSICIAN INC	52
[illegible] CORP	80
E-STEEL CORP	54
ETOYS INC	7
ETUNNELS INC	64
EXACTIS.COM INC	14
EXE TECHNOLOGIES INC	7
EXXON MOBIL CORP	10
FASHIONMALL.COM INC	10
FBI	6
FEDERAL COMMUNICATIONS COMMISSION	12
FEDERAL RESERVE AUTOMATION SERVICES	24
FEDERAL TRADE COMMISSION	7,30
FERRIS RESEARCH	14
FINGERHUT COS	7
FIRST USA BANK NA	6
FLEETBOSTON FINANCIAL CORP	40
FOODTRADER.COM INC	14
FORD MOTOR CO	10,67
FORRESTER RESEARCH INC	1,30
FREDDIE MAC	1
FRITO-LAY INC	40
FULD & CO	1
GARTNER GROUP INC	1,6,8,24,[illegible]
[illegible]	12
GENERAL ELECTRIC CO	50
GENERAL FOODS CORP	40
GENERAL MOTORS CORP	67
GEOTRUST INC	52
GEOWORKS CORP	10
GIGA INFORMATION GROUP INC	1,30,44
GLOBAL FOOD EXCHANGE	
GLOBAL MARINE INC	67
GOMEZ ADVISORS INC	7
GROCERYWORKS.COM INC	54
HANDSPRING INC	76
HARRIS INTERACTIVE INC	14
HEWLETT-PACKARD CO	30,66,87
HOLLIDAY FENOGLIO FOWLER LP	87
HONEYWELL INTERNATIONAL INC	40,50
HSBC USA INC	62
HUDSON & ASSOCIATES	32
HUDSON VENTURE PARTNERS LLP	35
HURWITZ GROUP INC	30
IBM GLOBAL SERVICES	42
IBM	6,10,72,87
[illegible].COM	10
IMANAGE INC	10
INFONETICS RESEARCH INC	54
INPUT	62
INTEL CORP	7,35,82
INTERNAP NETWORK SERVICES CORP	54
INTERNATIONAL COMPUTER NEGOTIATIONS INC	10
INTERNATIONAL DATA CORP	1,70,52,80
INTERNATIONAL LEAGUE AGAINST RACISM AND ANTI-SEMITISM	1
INTERNATIONAL QUALITY & PRODUCTIVITY CENTER	10
INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS	1
INTERNET SECURITY SYSTEMS INC	70
INTERPACT INC	24
INTERWOVEN INC	80
INTRANET SOLUTIONS INC	80
[illegible] INC	54
J.C. PENNEY CO	58
J.C. WILLIAMS GROUP LTD	76
J.P. MORGAN & CO	54
[illegible] INC	76
JIFFY LUBE INTERNATIONAL INC	52
JO-ANN STORES INC	20
JUPITER MEDIA METRIX INC	14
JUPITER RESEARCH	14
KBKIDS.COM INC	7
KEYSPAN CORP	40
KPMG CONSULTING LLC	76
KPMG INTERNATIONAL	30,76
KRAFT FOODS INC	40
KRAFT FOODS INTERNATIONAL	14
KYOCERA CORP	12
LABMORGAN	64
LANIER WORLDWIDE INC	80
LAWSON SOFTWARE	88
LERNOUT & HAUSPIE SPEECH PRODUCTS NV	30,72
LERNOUT & HAUSPIE SPEECH PRODUCTS USA INC	72
[illegible] TECHNOLOGY INC	32
LM ERICSSON TELEPHONE CO	10,80
LOCKHEED MARTIN CORP	16
LOGISTICS TECHNOLOGY GROUP LTD	62
LOGON CONSULTING INC	24
LUCENT TECHNOLOGIES INC	10
MACYS.COM INC	7
MAIL ABUSE PREVENTION SYSTEM LLC	14
MARINER CONSULTING INC	40
MARK MASTER INC	60
MARRIOTT INTERNATIONAL INC	76
MARSH INC	52
MARSHALL SPACE FLIGHT CENTER	74
MEANSBUSINESS INC	30
MELBOURNE IT LTD	1
MEMORIAL HEALTHCARE SYSTEM	20
META GROUP INC	1,6,42,46,80
MICROSOFT CORP	10,14,30,54,80,72,80,81,93
MICROSTRATEGY INC	46
MIRAMAX FILMS CORP	12
MOTION PICTURE ASSOCIATION OF AMERICA	12
NASA	74
NATIONAL RETAIL FEDERATION	88
NEBO SYSTEMS INC	82
NECHO SYSTEMS CORP	88
[illegible] PUBLISHING INC	54
NETWORK ASSOCIATES INC	82
NEULEVEL LLC	1
NEUSTAR INC	1
NEXTLINK COMMUNICATIONS INC	54
NOKIA CORP	10
NOMAD MOBILE RESEARCH CENTRE	70
NORTH RIVER VENTURES INC	12
NORTHPOINT COMMUNICATIONS GROUP INC	40
NOVELL INC	6
NTT DOCOMO INC	6
NYCE CORP	80
O'REILLY AND ASSOCIATES INC	70
OGLETHORPE POWER CORP	80
OPEN TEXT CORP	60
OPENPAGES INC	10
OPENREACH INC	64
ORACLE CORP	7,20,30,32,50,54,60
OUTSELL INC	1
OWENS & MINOR INC	82
OXFORD HEALTH PLANS INC	8
PALM INC	10,35,66
PAPEREXCHANGE.COM INC	1
PATRIOT COMPUTER CORP	7
PEPSI-COLA CO	40
PEROT SYSTEMS CORP	50
PETS.COM INC	20
PETSMART.COM INC	20
PHILIPS ELECTRONICS NV	30
POLARIS VENTURE PARTNERS INC	54
PPL CORP	52
PRICELINE.COM INC	54
PRICEWATERHOUSECOOPERS	7,40,60
PROCOMP INFORMATICS LTD	6
QUALCOMM INC	12
QUARK INC	81
[illegible] INC	12
RAREDOMAINS.COM LLC	1
RED HAT INC	12
REPUBLIC BANK OF NEW YORK	60
REQUISITE TECHNOLOGY INC	37
RESEARCH IN MOTION LTD	88
ROGERS COMMUNICATIONS INC	80
ROYAL DUTCH/SHELL GROUP	40
SAFEWAY INC	54
SALOMON SMITH BARNEY HOLDINGS INC	40
SANS INSTITUTE	24,76
SAP AG	20,28,46,50,62,80
SAP AMERICA INC	30
SAQQARA SYSTEMS INC	32
[illegible] INC	70
SECURITIES AND EXCHANGE COMMISSION	30,30,62
SECURITYFOCUS.COM	63
[illegible] INC	62
SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS	12
SPRINT CORP	12
SQUIRES RESOURCES INC	80
STERLING RESEARCH INC	64
STRATUS COMPUTER INC	40
STREAMLINE.COM INC	58
STUDENT ADVANTAGE INC	40
SUN HEALTHCARE SYSTEMS INC	76
SUN MICROSYSTEMS INC	80
SWISSAIR AG	10
SYMBIAN LTD	10,40
TALLY SYSTEMS CORP	10
TELE DANMARK	14
TENET HEALTHCARE CORP	40
TEXAS INSTRUMENTS INC	12
THE BOEING CO	12
THE CHASE MANHATTAN CORP	10,82
THE CONFERENCE BOARD INC	40
THE DOW CHEMICAL CO	24
THE GARTNER INSTITUTE	1
THE GOLDMAN SACHS GROUP INC	30
THE HARTFORD FINANCIAL SERVICES GROUP INC	40
THE LINLEY GROUP	80
THE MONROE EVENING NEWS	61
THE ORIGINAL HONEY BAKED HAM COMPANY OF GEORGIA INC	7
THE PROGRESS GROUP	42
THE YANKEE GROUP	20,32,66
TIME WARNER INC	12,50
TOYSRUS.COM INC	7
TRAVELERS PROPERTY CASUALTY CORP	80
TRELLIA CORP	30
TROPICANA PRODUCTS INC	40
TRISECURE CORP	14
U.S. DEPARTMENT OF COMMERCE	12
U.S. DEPARTMENT OF DEFENSE	8
U.S. DEPARTMENT OF JUSTICE	8
U.S. ROBOTICS CORP	54
UAL CORP	12
UCENTRIC SYSTEMS	54
[illegible] CORP	62
UNION OF FRENCH JEWISH STUDENTS	1
UNISYS CORP	8,80,82
UNITED AIRLINES INC	12
UNITED MEDIA INC	1
UNITED NATIONS HAGUE CONVENTION	1
UTIMACO SAFEWARE AG	70
VENTRO CORP	40
VERITAS SOFTWARE CORP	30
[illegible] CORP	30
VOICE PILOT INC	72
VOTEHERE.NET INC	6
VPNX.COM INC	54
WACHOVIA CORP	88
WAL-MART STORES INC	80
WARROOM RESEARCH INC	24
WELLS FARGO & CO	40
WILEY REIN & FIELDING	1
WILLIAM M. MERCER INC	40
WILLIAMS COMMUNICATIONS GROUP INC	80
WILMINGTON TRUST CORP	24
WINDWIRE INC	82
WIRELESS INTERNET & MOBILE COMPUTING	40
WOLF, GREENFIELD & SACKS PC	76
WORLD INFORMATION TECHNOLOGY AND SERVICES ALLIANCE	6
WORLDCOM INC	12
WORLDWIT	54
XO COMMUNICATIONS INC	42,84
YAHOO INC	1
ZONA RESEARCH INC	6

Continued from page 1

Yahoo

wheo dot-coms sell their wares in countries other than their own. Although the grip of foreign laws on U.S. firms with no physical presence in the foreign country is a tenuous ooe, legal experts said legislation and international treaties are being written to address enforcement of local laws on foreign companies.

"Yahoo can igoore the French courts if they want, because they have no jurisdiction here," said Jan Baran, a constitutional attorney at Wiley, Rein & Fielding in Washington.

"But Yahoo will never be free and clear in France, and if it ever opens offices or operations there, it could find itself potentially liable for violations under Frencb law and have its assets seized."

After seven months of appeals, Judge Jean Jacques Gomez last week upheld the original court order against Yahoo. But the court gave Yahoo three months to either put a filter in place to block access of Nazi memorabilia to Frencb citizens or face fines of 100,000 francs (roughly $13,000) per day.

The ruling was based on Frencb penal codes outlawing the trivialization or denial of the Holocaust. The International League Against Racism and Anti-Semitism and the Uoion of French Jewish Students brought the complaint against Yahno and have threatened to boycott the company.

Chief Yahoo and company co-founder Jerry Yang told a French newspaper last June that Yahoo wouldn't alter its conteot to comply with a law originating outside the U.S. Yahoo officials refused to comment oo the case last week.

Dan Burk, professor of law at the University of Minnesota, said Frencb courts could seek an injunctioo against Yahoo through U.S. courts; however First Amendment protection makes U.S. enforcement bans on Nazi memorabilia unlikely.

Plans in the Works

The contentious issue of Internet jurisdiction has attracted the attention of the European Union and the United Natinns through its Hague Convention. Both organizations have proposals in the works aimed at better enforcement of judgments in civil and commercial matters. The U.S. House Jodiciary Committee began exploring the issue of local enforcement of foreign laws last June, under the Courts and Intellectual Property Subcommittee.

"When Coca-Cola goes into France, it complies witb French law," said Burk. "Many dot-coms are relatively new and think that they are not subject to local legislation, but they are going to have to start thinking like more traditional corporations."

Web auctioneer eBay Inc. and online bookseller Amazon.com Inc. have both sought less litigious routes to resolving Internet jurisdiction conflicts.

Last November, Seattle-based Amazon.com voluntarily agreed to bar the shipment of Adolf Hitler's autobiography, *Mein Kampf*, in Germany, where tbe book is considered hate literature, even though it can be purchased legally in the U.S. "We believe in freedom of the press, but we based our decision on German law," said Amazon spokesman Bill Curry.

In accordance with local laws, San Jose-based eBay prohibits the sale of Nazi-related goods by its members oo its sites in France and Germany. "We made it clear from the beginning that we would abide by their laws," said eBay spokesman Kevin Pursglove. He added that eBay's registered users must agree to follow the laws of the countries where they reside and where they do business. ■

Whose Net?

Several legislative bodies are examining the contentious issue of Net jurisdiction:

- Last June, the U.S. House Judicial Committee began hearing testimony on **local enforcement of foreign laws.**
- In July 1999, the European Union called for a Council Regulatinn proposal concerning **enforcement of judgments** in civil and commercial matters among member states.
- The United Nations is exploring **international enforcement guidelines** under the Hague Convention.

Continued from page 1

B2B Exchanges

can significantly hamper global expansion plans.

Because of slight variations in the meanings of words, Boston-based PaperExchange.com Inc. ran into legal problems in certain European countries by using the same electronic membership agreement it uses for U.S. buyers and sellers.

PaperExchange had to alter tbe agreemeot it uses in those countries. The lesson learned: "Get the lawyers involved early," said Bob Brenner, PaperExchange.com's chief technology officer. "It wasn't a big deal, but it's the little stuff you need to think about."

Finding off-the-shelf software that adequately handles multiple product attributes, languages and currencies is also a problem.

"When I first came bere a year ago, I saw that everything we did was customized. My reaction was: There has got be stuff out on the market that does this. But tbere isn't," Brenner said.

Global Barriers

The top barriers to global marketplace growth are:

- Different business practices
- Insufficient technology
- Local employee hiring
- Regulatory hurdles
- International transaction costs
- Currency differences
- Local partnership establishment
- Shipping and logistics complexities

SOURCE: FORRESTER RESEARCH INC., CAMBRIDGE, MASS.

As a result, PaperExchange's 60-person software design and development group continues to write most of the code used by the e-marketplace.

Finding ready-to-go technology also has been an issue for Atlanta-based Global Food Exchange, an electronic marketplace that deals in perishable foods, which can go by different names and descriptions in various parts of the world. For example, a species or type of banana may be particular to a certain country.

"There's a complete taxonomy that is specific to food in general and perishables in particular, and no off-the-shelf software. We had 50 people working on our systems for a year to create a database of attributes used by buyers and sellers in different countries," said Franck Devaux, international sales manager at Global Food Exchange.

Globalization further complicates the task of integrating these homegrown marketplace systems with buyers' and sellers' eoterprise software, as well as with systems of business partners that provide value-added online services, sucb as financing and logistics.

"Once you go across national borders, these problems escalate, because you're then talking about integrating across various import and export agencies, multinational distributors and customs [agencies]," said Matt Sanders, an analyst at Cambridge, Mass.-based Forrester.

"Realistically, international trade through e-marketplaces is mucb more difficult than domestic. These guys will have a steep climb to achieve these figures," he said, referring to the marketplaces' 44% global trade figure by 2002.

Forrester advises marketplaces to narrow their global expansion strategies to focus first on countries like Canada, Luxembourg and Belgium, which are closer to adopting online marketplaces for trading imports and exports.

Sanders also advises global corporations to pursue a two-pronged sourcing strategy to accommodate suppliers and buyers in countries that are further along with Internet-based trading and those, such as Greece, Peru, South Africa and France, tbat remain "e-business introverts." ■

Microsoft, Hacker Meet

BY JORIS EVERS, IDG NEWS SERVICE

AMSTERDAM

Microsoft Corp. earlier tbis montb met witb Dimitri, the Dutch hacker who recently mocked the software giant by hacking into one of its Web servers twice within one week.

Dimitri, a 19-year-old IT student, visited Microsoft's office near Amsterdam's airport. There, he met with tbe company's public relations manager and three staffers, Microsoft confirmed.

Dimitri recently hacked into the same Web server twice — the second time after Microsoft had said the hole was patched. Dimitri created files in Microsoft's system boasting of his hack and alerted the media. Both Microsoft and Dimitri are being secretive about their meeting.

Adam Sohn, a Microsoft spokesman, said Microsoft hasn't "as of now" filed charges against Dimitri. Sohn declined to comment on the meeting, stating that "the topic and character are confidential."

Experts have an explanation for the secrecy. "Obviously, they were talking about security. If Dimitri found a new security problem, they would want to keep that under wraps," said Elias Levy, chief technology officer at SecurityFocus.com, a computer security firm in San Mateo, Calif. ■

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0385697. CANADIAN POSTMASTER: [illegible] Copyright 2000 by Computerworld Inc. All rights reserved. [illegible] 300 N. Zeeb Road, Ann Arbor, Mich. 48106. [illegible] Copyright Clearance Center (CCC) [illegible] 27 Congress St., Salem, Mass. 01970 [illegible] Fax (717) 399-1900. Web site: www.reprintbuyer.com [illegible] $250 per year; Europe – $295 per year; all other countries – $295 per year. Subscriptions call toll-free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

ABC ABP

FRANK HAYES/FRANKLY SPEAKING

Got Gadgets?

CHRISTMAS IS COMING. OK, you know that already. Anybody who walked through a mall or watched all the ads spill out of the Sunday paper this weekend knows that. Yes, it means that for the next month, any IT shop that's supporting a Web store will be on call 24 hours a day. But it also means something a little more subtle for all corporate IT shops: This is when users get gadgets.

Some will receive them as holiday gifts. Some will treat themselves because of holiday sale prices or because year-end bonuses are burning holes in their pockets.

Either way, over the next month or so, a new wave of wireless handhelds, e-mail-enabled cell phones, high-speed cable modems and fruit-colored home computers will start showing up in the pockets, briefcases and home offices of your users.

Some of those users will want help connecting to your company's data, applications and mail systems. Some will just want help getting the new gizmos working. And chances are, in the past, you've dodged those requests at every turn — and, if cornered, insisted that, no, IT absolutely can't help them with their new toys.

Maybe this year it's time to start saying yes.

Does that sound crazy? Think about it: These users are going to connect to your systems one way or another. They'll be using those cable modems to telecommute and those handhelds to read their mail. They won't stop just because *you* won't help.

But what they *will* do is get the connection made in the sloppiest, least-secure, most problem-prone way. Joe in Accounting's brother-in-law won't worry about whether that new cable-modem-equipped PC has virus protection or a personal firewall. Sally in Sales will have her neighborhood nerd set up her handheld's e-mail, but he'll end up knowing her password, too.

Then, down the line, something will go wrong. A virus, maybe, or a hacker's attack, or a configuration problem that ties up your servers, or an e-mail glitch that sends hundreds of copies of some hapless user's e-mail raining down on everyone in your company. Then you won't have a choice; you'll spend hours or days scrambling to repair the damage.

So maybe your choice isn't really between helping those gadget users or not — it's between helping now or mopping up a huge mess later.

Besides, there are some big advantages to offering gadget help — within limits, on a time-available basis — to your users.

For one, you'll find out exactly what they're doing with the darned things. You'll have an early chance to scotch really bad ideas. You'll get an early window into what might turn out to be good ideas — the kind all your telecommuters or salespeople might want to adopt eventually.

The choice may be between helping users now or mopping up a huge mess later.

You'll also get some experience with hot new hardware at your users' expense — figuring out whether Palms or Handsprings or Cassiopeias or Jornadas give you the least headaches. And you'll make your first round of mistakes setting up cable-modem telecommuters, handheld e-mail access and wireless Web browsing — but you'll have some control over configuration and security.

Maybe most important, you'll get a little leverage with those users. These gadgets represent what *they* want, not what IT wants. You're doing them a favor. That might come in handy down the line — say, when you need user cooperation defining specifications or on a pilot project.

Even if you can't call in that favor, you'll still have better relations with users, along with fewer security problems and more in-house knowledge of how to deal with users' gadgets. And that could make gadget help a gift that keeps on giving all year long. ◗

Hayes, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

MIDWESTERN BANK wants a redesign of an accounting report form. Systems analyst pilot fish is puzzled by the odd layout but does what's asked for, presents the prototype and it's approved. But the fish has to know – why the odd layout? The answer: "The columns on the report will now match the hand stamp that will be stamped onto the page to create the accounting headings they really need."

USER CALLS tech support pilot fish. Seems she can't find the e-mail messages she's been saving in a folder. The folder's name: Deleted Items. "The messages you wanted to keep?" asks the astonished fish. "Does that seem strange to you?" "Well," snaps the user, "that's the only folder there was!"

A BUILDER'S IT SHOP sends uninterruptible power supplies to all construction trailers, with instructions to "place one at each computer location." IT pilot fish on-site checks the server and sees a UPS plugged in next to each computer – but nothing plugged into the UPSs. Don't worry, says the construction-site boss – if the power goes out, we'll plug the computers into the UPSs and keep working.

BOSS DECREES, "No personal work in the office – don't even bring in personal documents, even if you're not using them! If you need information, we've got the Internet." So this pilot fish takes everything home, including the reference books he'd brought in. Six weeks later he gets a reprimand: "You're not serious about your work. You don't have any reference books in here. How can you look anything up?"

UNCANNY RESEMBLANCE Knowing his boss is a control freak, IT pilot fish shows him a rough draft of the progress report he's working on. Boss makes changes; fish edits them in and resubmits. No surprise, the report still isn't quite right – more changes, and the fish revises the revision. Third round: back to the boss, more changes. Finally, boss approves the report. "Difference between the final draft and the original rough?" says fish: "One word."

Sharky's had his fill of Thanksgiving turkeys, but he's still got room for the human kind. **sharky@computerworld.com.** You score a Shark shirt if your true tale of IT sees print – or if it shows up in the daily Web feed at *computerworld.com/sharky.*

The 5th Wave

"Sure, at first it sounded great – an intuitive network adapter that helps people write memos by finishing their thoughts for them."

E-mail richtennant@the5thwave.com

What do you want the Internet to be?"

"OPORTUNIDAD.
no kid ever has to shine shoes like I did.
Unless they actually want to."

Sammy Sosa

eBusiness

Well, you've nailed another one, Señor Sosa. And with Nortel Networks™ Clarify™ portfolio of customer relationship solutions, opportunities abound in the world of eBusiness. It enables companies to integrate their sales, marketing and service capabilities with the new, high-performance Internet. Combining data and telephony networks into one Unified Network. And turning every point of customer interaction, from your Web site to call centers to data centers, into an opportunity for stronger, more profitable customer relationships. So come together, right now with Nortel Networks. And make the Internet whatever you want it to be. **nortelnetworks.com**

NORTEL NETWORKS™

How the world shares ideas.

Nortel Networks, Unified Networks, Clarify, the Nortel Networks logo, the Globemark and "How the world shares ideas," are trademarks of Nortel Networks. "What do you want the Internet to be?" is a service mark of Nortel Networks. ©2000 Nortel Networks. All rights reserved.

WHY FINNAIR IS GOING WITH OUR E-BUSINESS SOLUTIONS FOR THE LONG HAUL.

When Finland's national airline was looking to lift long-distance cargo salas, it looked to e-business technology. And that maant Unisys. Our solution? Tha Unisys e-@ction Internet Commerce Enabler: A unique application thet

allows Finnair's partners and cliants to place orders and track cargo status and location via the Intamet. What's more, we integrated this e-business solution into Finnair's existing systems. So the airline's Web-enabled cargo operetion could be up and flying quickly and economically. All of which puts Finnair miles ahead of the competition. But thet's what you'd axpect from the people who ara elways ready to go the distance for thair clients. www.unisys.com

UNISYS

We eat, slaep and drink this stuff.

©2000 Unisys Corporation. Unisys is a registered trademark and e-@ction is a trademark of Unisys Corporation.